John Henderson

THESIS FOR M.D. DEGREE.

SUBJECT :-

The Treatment of pulmonary tuberculosis by intravenous injections of Hetol, and, subcutaneous injections of Cinnamate of Sodium.

oOo

add to note about this paper " and ~~one~~ pages to be numbered"

1. Bone, Douglas J.-M. Chorea of ~~Sydenham~~ S.
Good Synopsis of existing knowledge & 14 cases.

2. Jackson, W. Roy. Some considerations on Rheumatism S
No ~~and~~ References given
(1½ page)

3. H. H. Davis - "abscess of the Lung" Non- One case not abstract
heard of as abscess & some quotations full ~~in~~ text of two
pages (not numbered) No references -

4. John Henderson Treatment of Pulmonary Tuberculosis by intra
venous injection of Glatol. Lumbar and Rectal
some 8 cases - results good - S+.

5. Mackenzie, J. W. Formaldehyde as a Pulmonary Sedative
Interesting - Considerable number of Cases S+

6. Wells, John W. a Treatise on Cod Liver oil &
Cod Liver oil Emulsions -
Many analyses showing composition of C.L.O & (S++?)
Emulsions - absorption & elimination of S+
the oil &c.

7. Peal, H. S. Some observations on the Blood in pulmonary
Phthisis - S+

8. Starkie E. S. D. Cases illustrative of some complic-
cations of Gastric Ulcer. Figures & commentary S?

9. Kerr, Frank Ferguson. Treat. of 19 Cases of ~~Diphtheria~~ S

10. Leighton, J. A. Diphtheria: a Study illustrated by Cases S.

11. Tyrrell, E. J. Bactericidal action of some Compounds of Silver. S+

12. Jennings, W. E. Plague. measures. Diagnosis &c S+ +4?

13. Rose, L. Etiology & Treatt of Ulcer of Stomach. S

4 HOUR CHART.

DISEASE.

Name { Annie Barret

Age 31

Diet

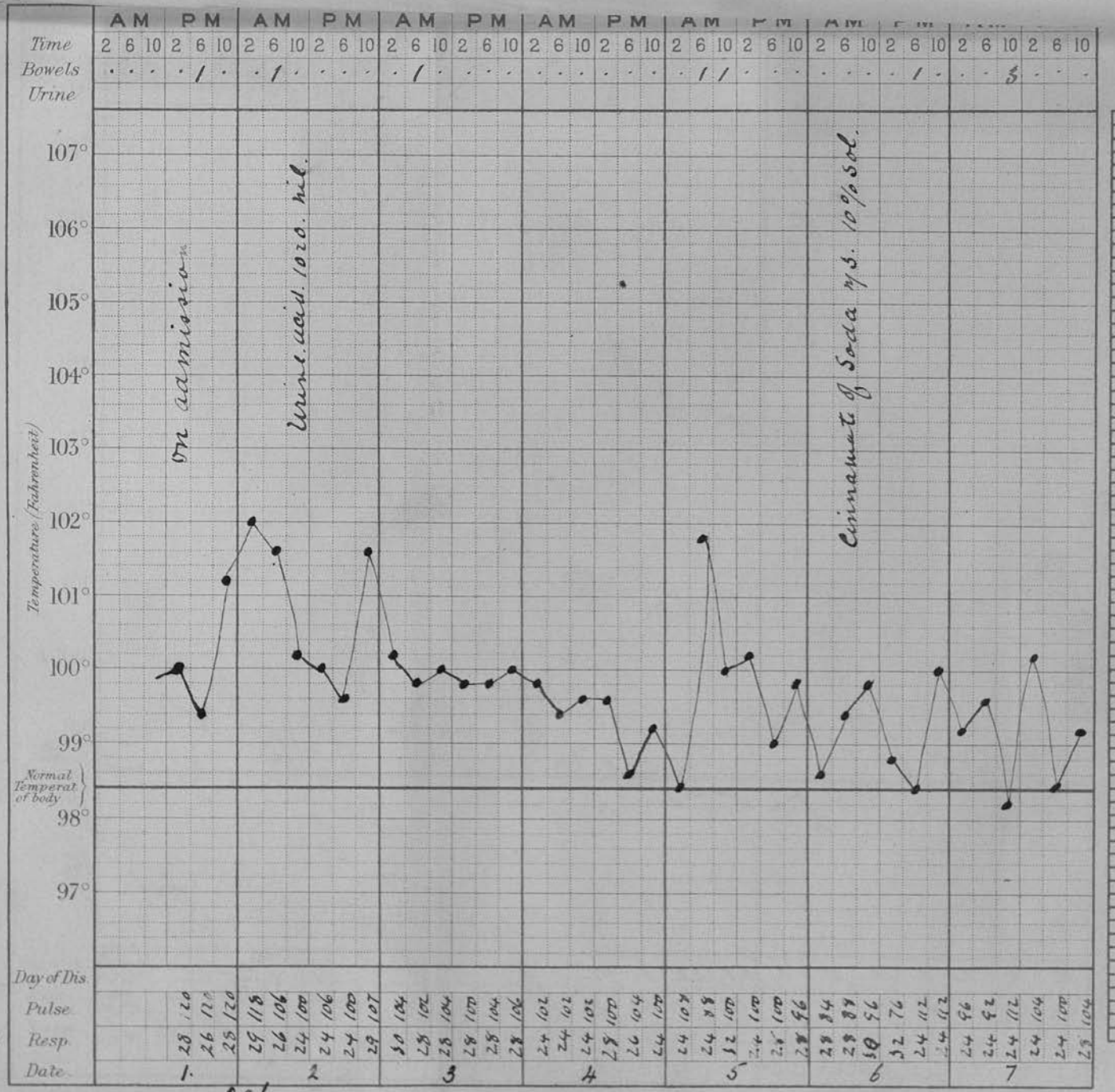
Case Book N°

Notes of Case

Date of admission

Oct. 1st. 1902.

Result



Entered at Stationers Hall. Printed and Published by Wodderspoon & Co's 6. Gate Street Lincolns Inn. Goulds Clinical Chart

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name Annie Barret

Age 31 yrs.

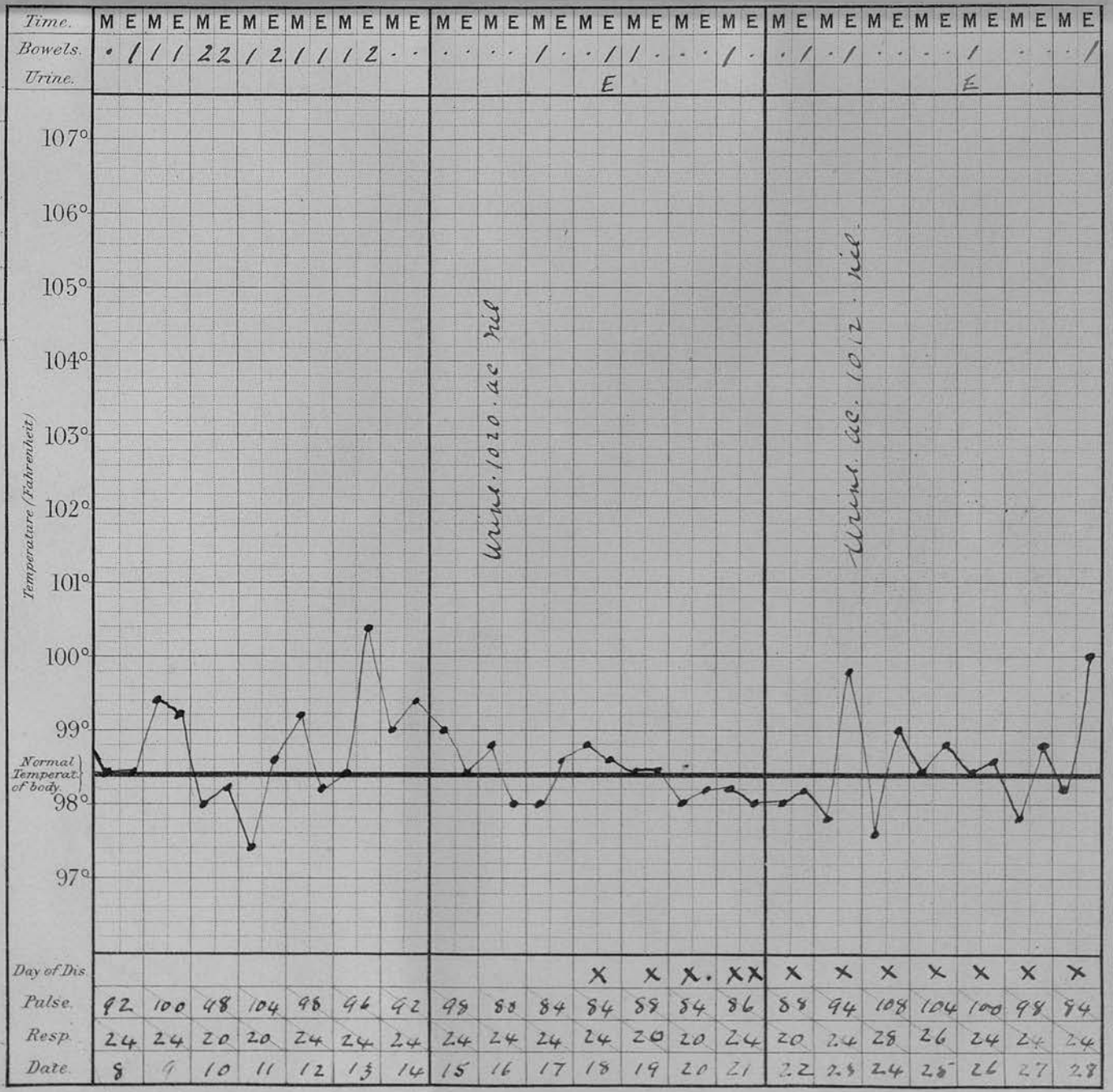
Diet

Case Book N°

Date of admission.

Oct. 1st. 02.

Result



Entered at Stationers Hall. *Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn.* *Gould's Clinical Chart.*

DISEASE.

Notes of Case.

Name Annie Barrett.

Age 32.

Diet

Case Book N°

Date of admission.
Oct. 18th. 1902.

Result

	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E
Time.																																						
Bowels.	1	1	.	.	.																																	
Urine.																																						

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° *Normal Temperat. of body.* 98° 97°

Temperature. (Centigrade)

42° 41° 40° 39° 38° 37° 36° 35°

Day of Dis.	X		X																																			
Pulse.	88		100		98																																		
Resp.	24		24		24																																		
Date.	29		30		31																																		

Entered at Stationers Hall. *Printed and Published by Wodderspoon & Co. 6. Gate Street Lincolns Inn.* *Gould's Clinical Chart.*

DISEASE.

Notes of Case.

Name George Baker

Age 9.

Diet

Case Book No.

Date of admission.
Nov. 26th 1902

Result

	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E
Time.																																						
Bowels.	.	.	/	.	.	.	.	/	.	.	.	/	.	.	.	.	.	/	/	.	/	.	/	/	/	/	/	/	.									
Urine.																																						

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° *Normal Temperat. of body.* 98° 97°

Temperature. (Centigrade)

42° 41° 40° 39° 38° 37° 36° 35°

Weight 3 st. 8 1/2 lbs.
urine 1020 ach. nil.

Dovil Cinnamate 10% sol.
m. ff. Hypoderm. ad. max. dosag.

Weight 3 st. 8 1/2 lbs.
urine 1032. ac. nil.

Day of Dis.	100																																					
Pulse.	100		96		104		104		100		88		88	88		84		92		84		74		80		100		88										
Resp.	28		28		28		24		28		26		24	24		24		24		24		24		24		24		24										
Date.	26		27		28		29		30		1		2	3		4		5		6		7		8		9		10										

Entered at Stationer's Hall. *Printed and Published by Wodderspoon & Co. 6 Gate Street Lincolns Inn* *Gould's Clinical Chart.*

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { Alfred Price

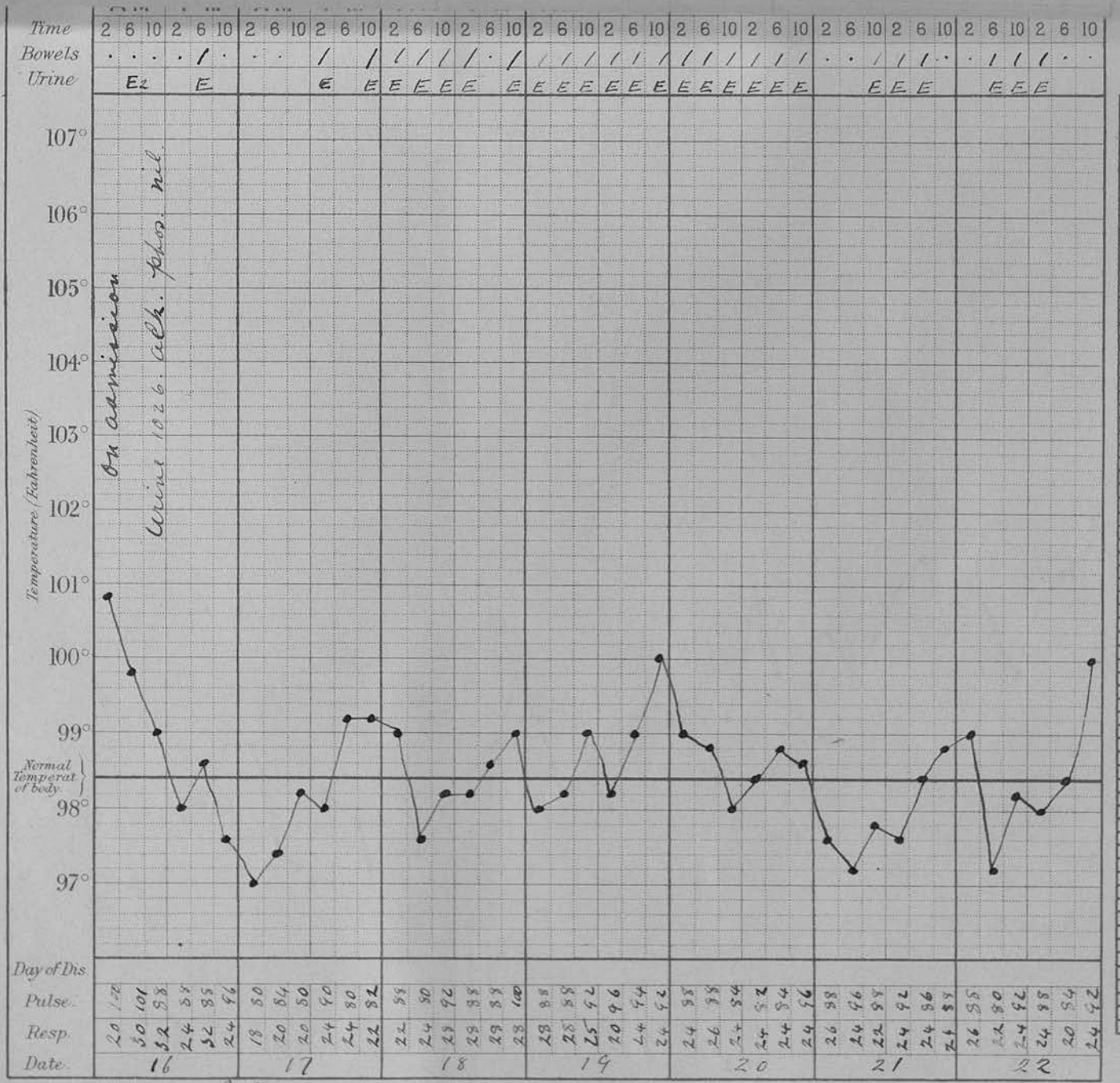
Age 29 yrs.

Diet

Case Book N°

Notes of Case

On admission Urine 1026. acid. Alb. nil.



Date of admission June 16th. 1902.

Result

Entered at Stationers Hall June Printed and Published by Wodderspoon & Co 6, Gate Street, Lincolns Inn Goulds Clinical Chart

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { Alfred Price

Age 29 yrs.

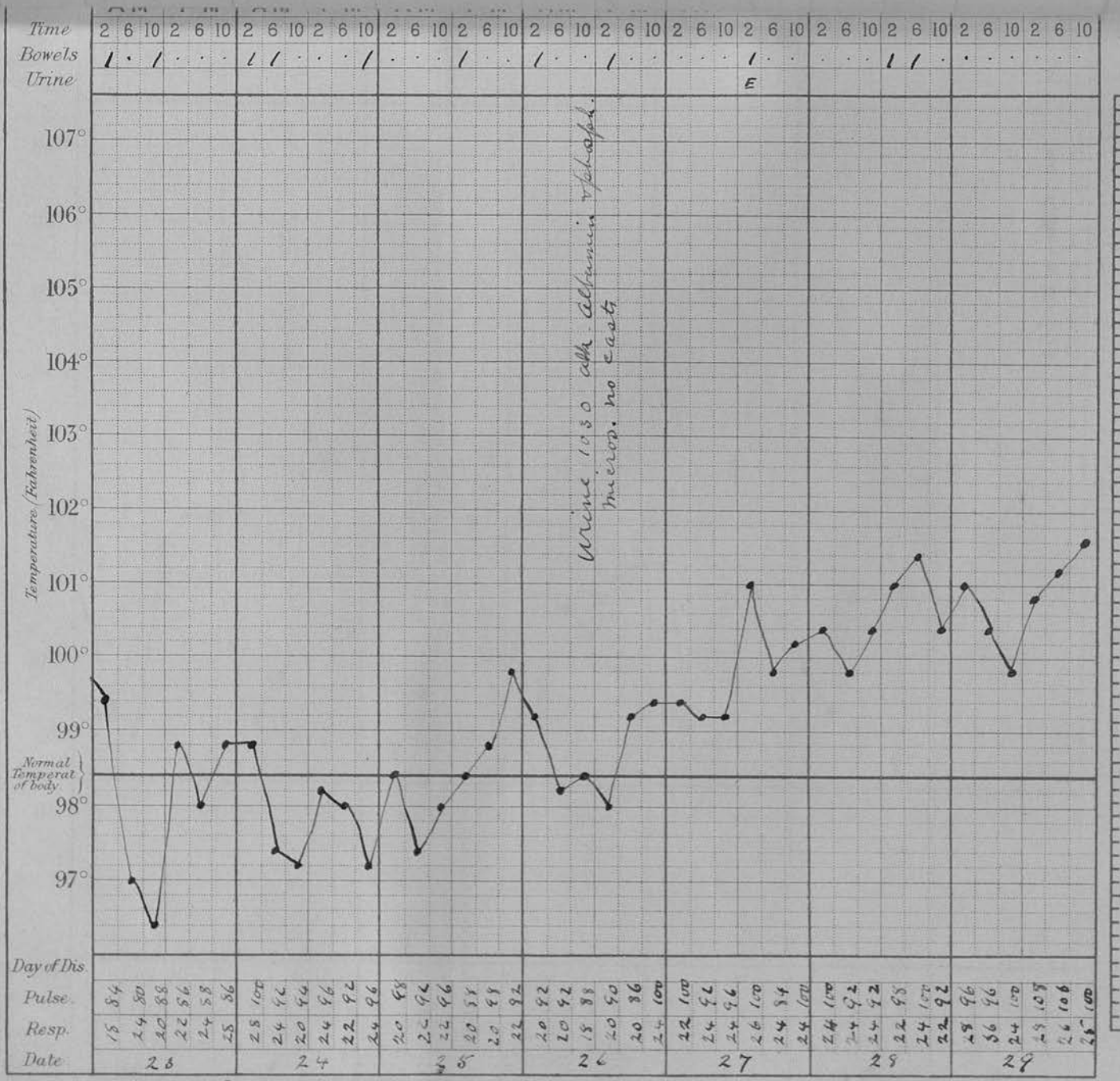
Diet

Case Book No.

Notes of Case

Date of admission 16. 6. 02.

Result



Entered at Stationers Hall. June

Printed and Published by Wedderspoon & Co 6 Gate Street Lincolns Inn

Gould's Clinical Chart.

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { Alfred Price

Age 29 yrs.

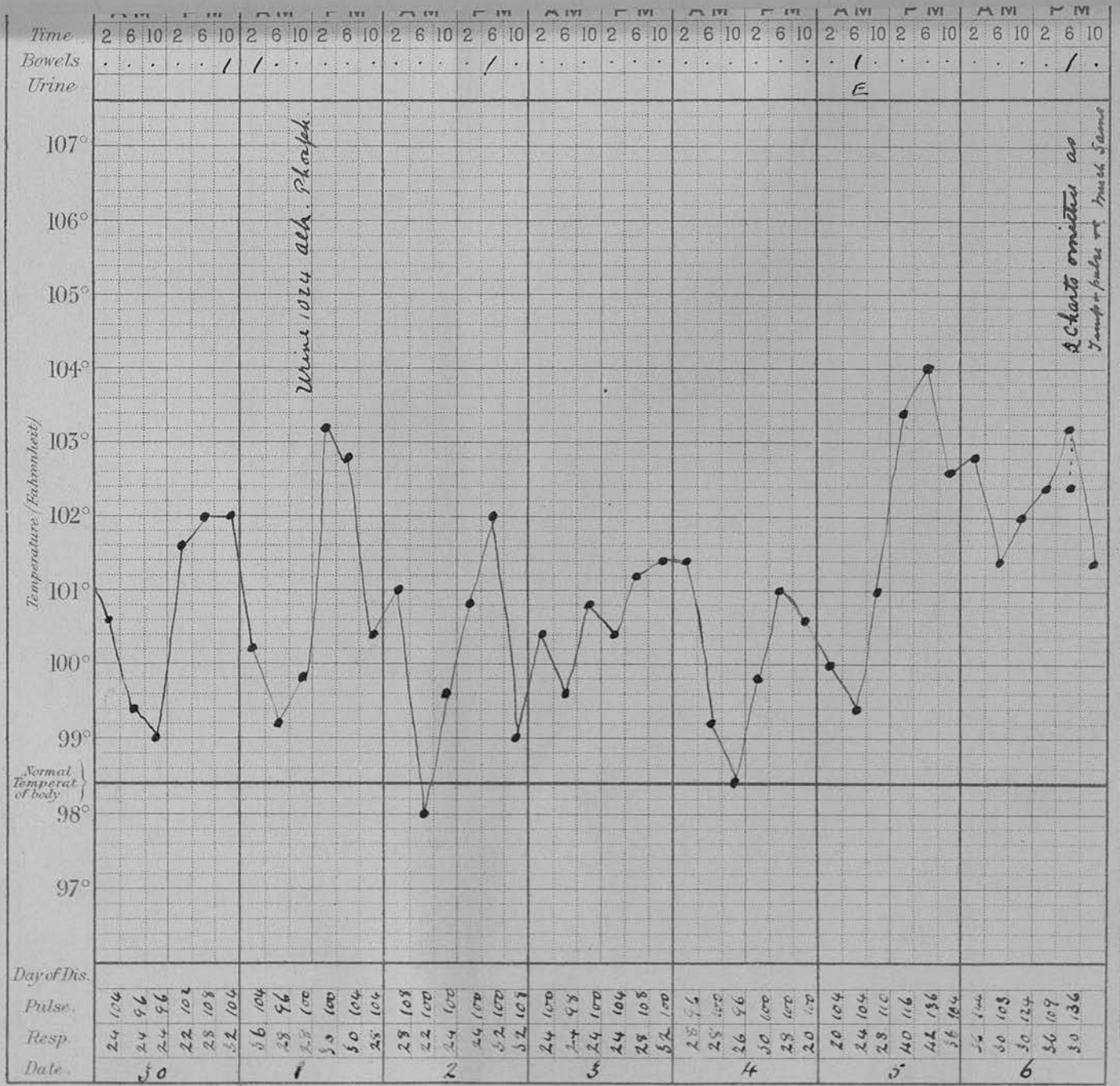
Diet

Case Book N°

Notes of Case

Date of admission 16. 6. 02.

Result



Entered at Stationers Hall. July Printed and Published by Wodderspoon & Co 6 Gate Street Lincolns Inn. Aug. Gould's Clinical Chart

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { alfred Price

Age 29

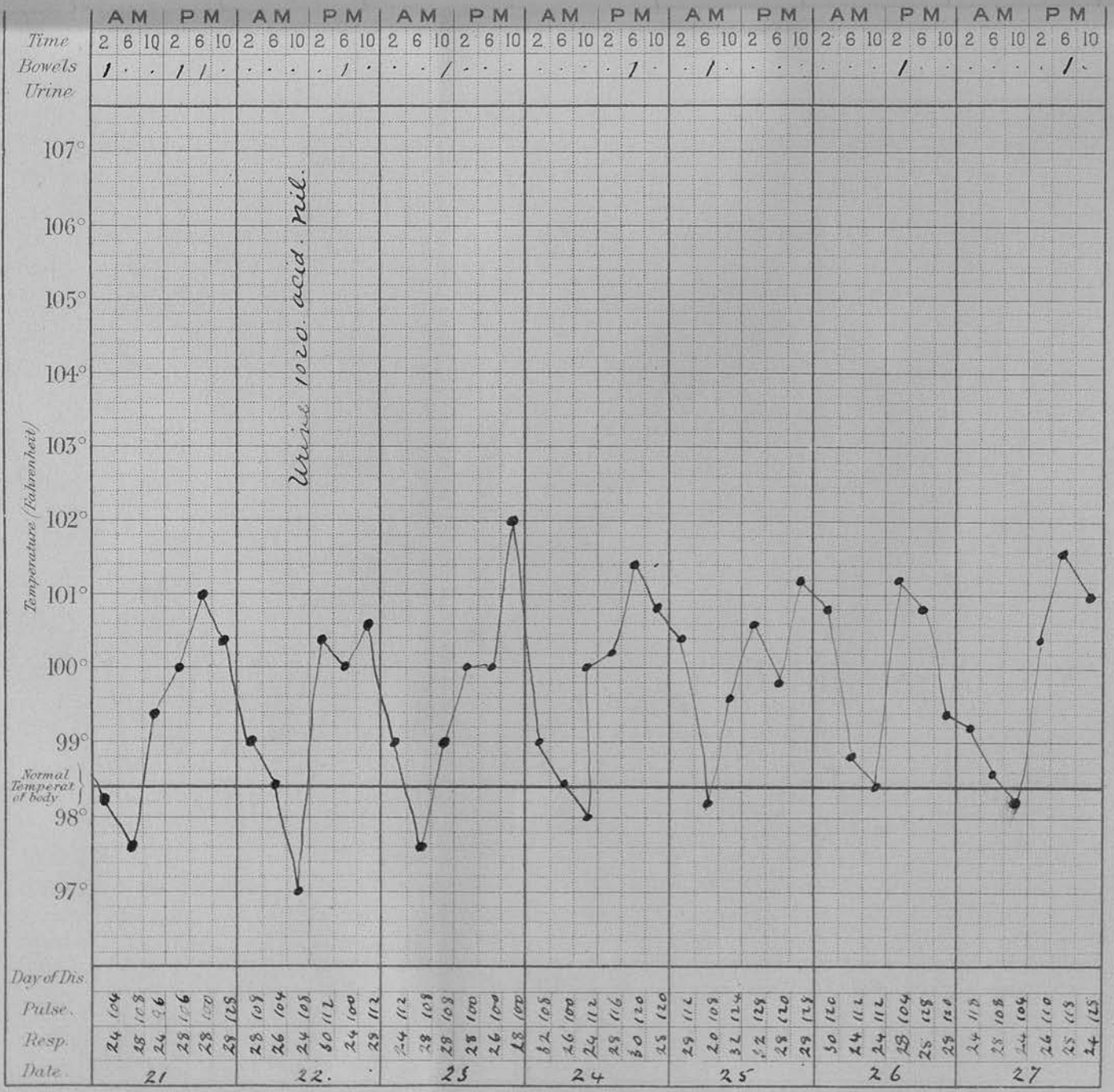
Diet

Case Book No.

Notes of Case

Date of admission 16. 6. 02.

Result



Entered at Stationers Hall. Printed and Published by Wodderspoon & Co 6, Gate Street Lincolns Inn. Goulds Clinical Chart

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

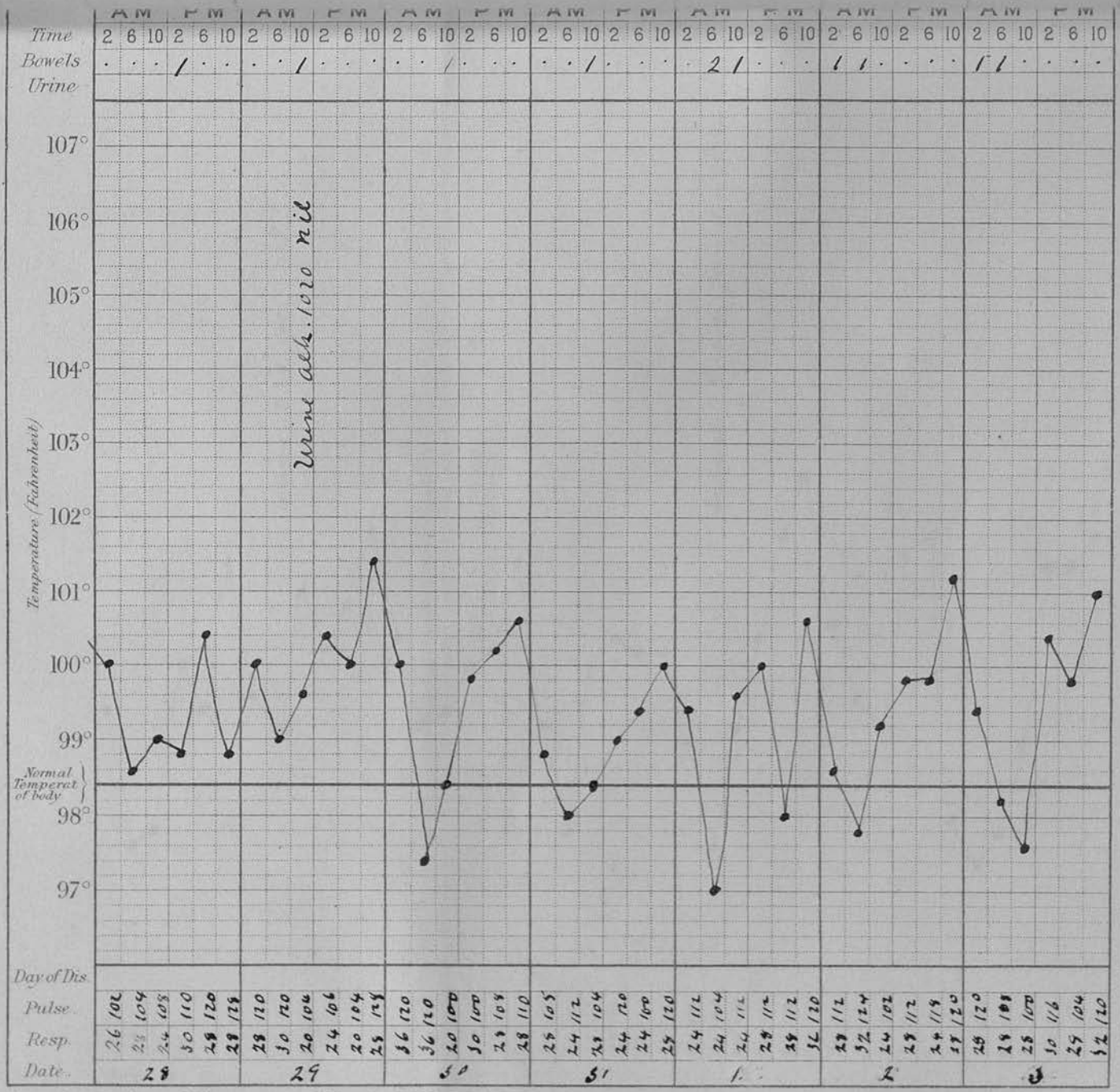
Name { Alfred Price

Age 29

Diet

Case Book N°

Notes of Case



Date of admission 16. 6. 02.

Result

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aug.

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { Alfred Price

Age 29

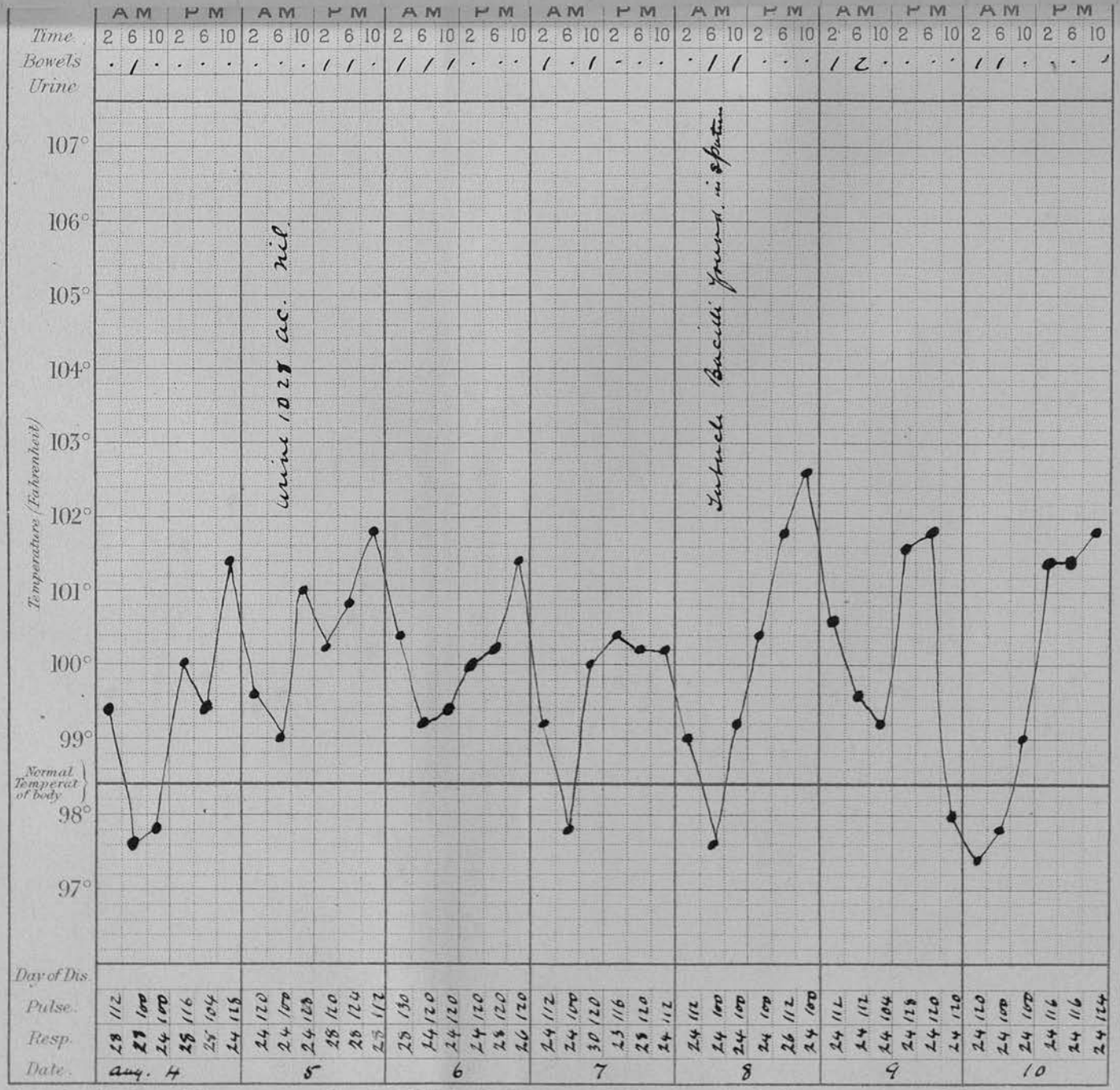
Diet

Case Book N°

Notes of Case

Date of admission 16. 6. 02.

Result



Entered at Stationers Hall. Printed and Published by Wodderspoon & Co 6, Gate Street, Lincolns Inn. Gould's Clinical Chart

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

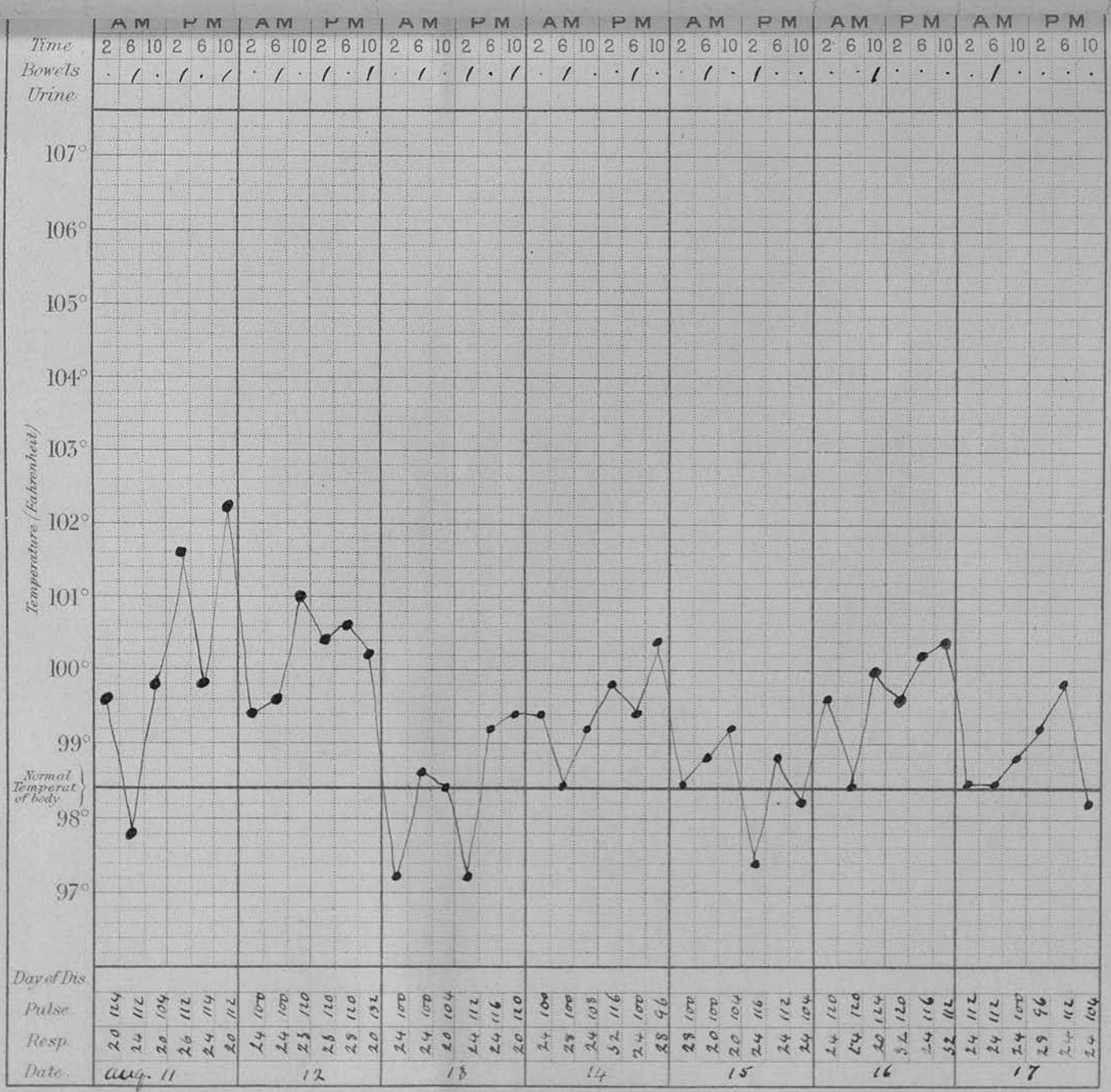
Name { Alfred Price

Age 29.

Diet

Case Book No.

Notes of Case



Date of admission 16. 6. 02.

Result

Entered at Stationers Hall. Printed and Published by Wodderspoon & Co 6 Gate Street Lincolns Inn. Goulds Clinical Chart

TEMPERATURE CHART.

DISEASE.

Phthisis Pulmonalis

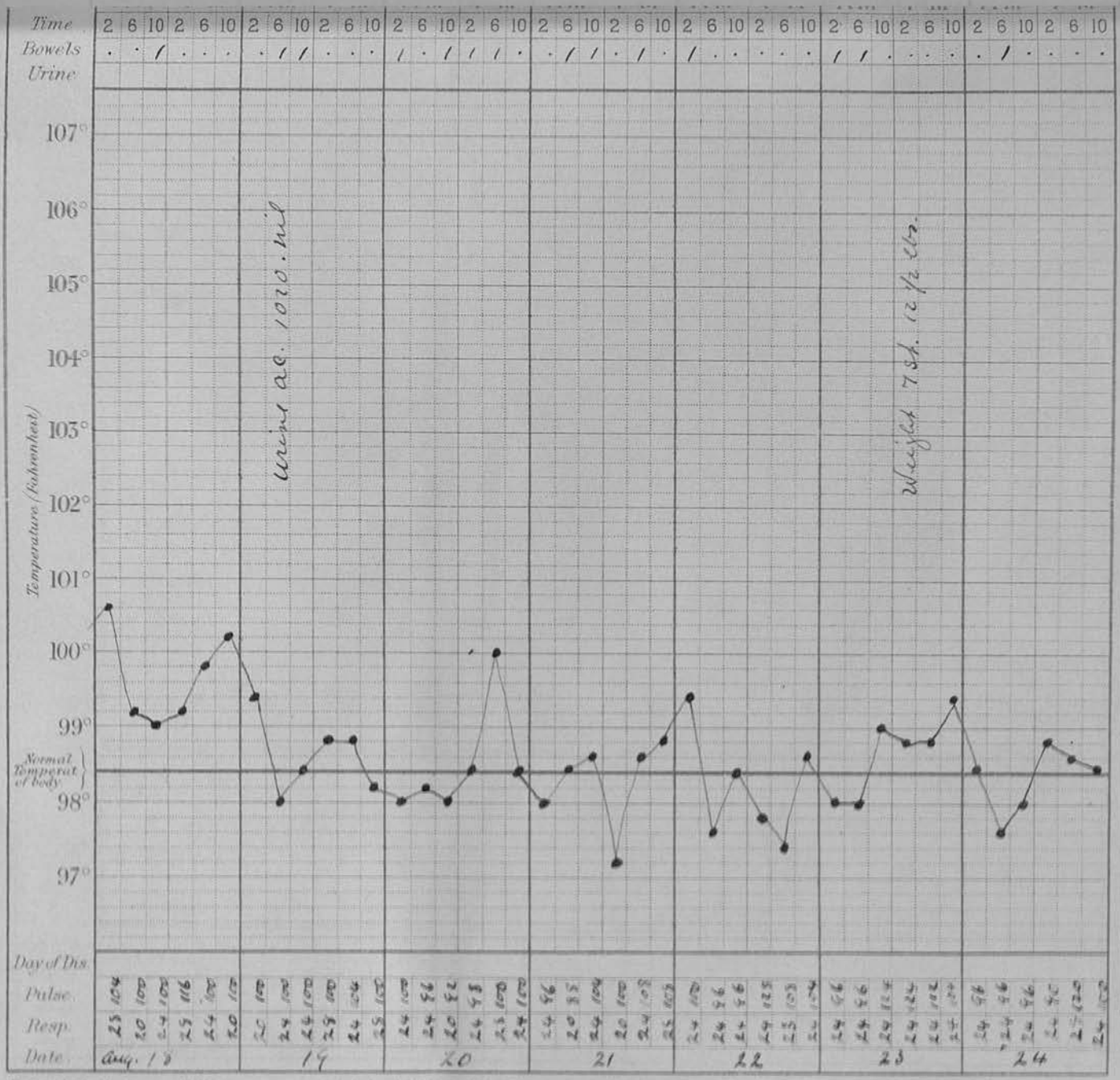
Name: Alfred Price

Age: 29

Diet:

Case Book N°:

Notes of Case



Date of admission 16. 6. 02.

Result

Entered at Stationers Hall. Printed and Published by Waddington & Co 6 Gate Street Lincolns Inn. Gould's Clinical Chart

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { Alfred Price

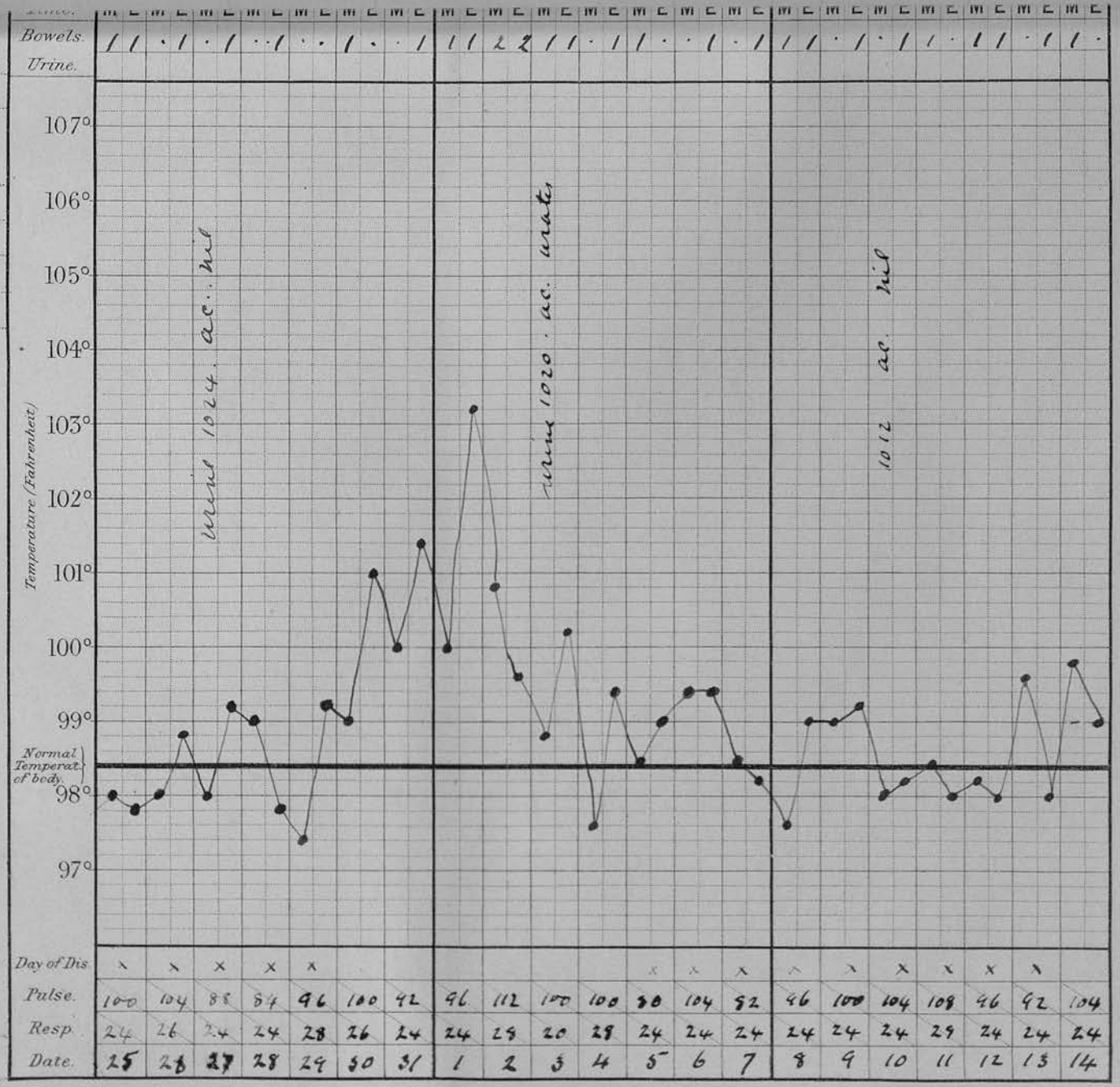
Age 29.

Diet

Case Book N°

Date of admission. 16. 6. 02.

Result



Entered at Stationers Hall. Printed and Published by Wodderspoon & Co. 6, Gate Street Lincoln's Inn. Gould's Clinical Chart.

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { Alfred Price

Age 29

Diet

Case Book N°

Date of admission. 16. 6. 02.

Result

Bowels.	1	·	1	·	1	·
Urine.						

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat of body.

Weight 8 st. 4 lbs.

Day of Dis.					
Pulse.	106	108	88	88	
Resp.	24	24	24	24	
Date.	15	16	17	18	

42° 41° 40° 39° 38° 37° 36° 35°

Temperature (Centigrade)

Entered at Stationer's Hall. Sept. Printed and Published by Wodderspoon & Co. 6, Gate Street Lincoln's Inn

Gould's Clinical Chart.

4 HOUR CHART.

DISEASE.

Tuberculous Meningitis

Name: William Sayers

Age: 17 years

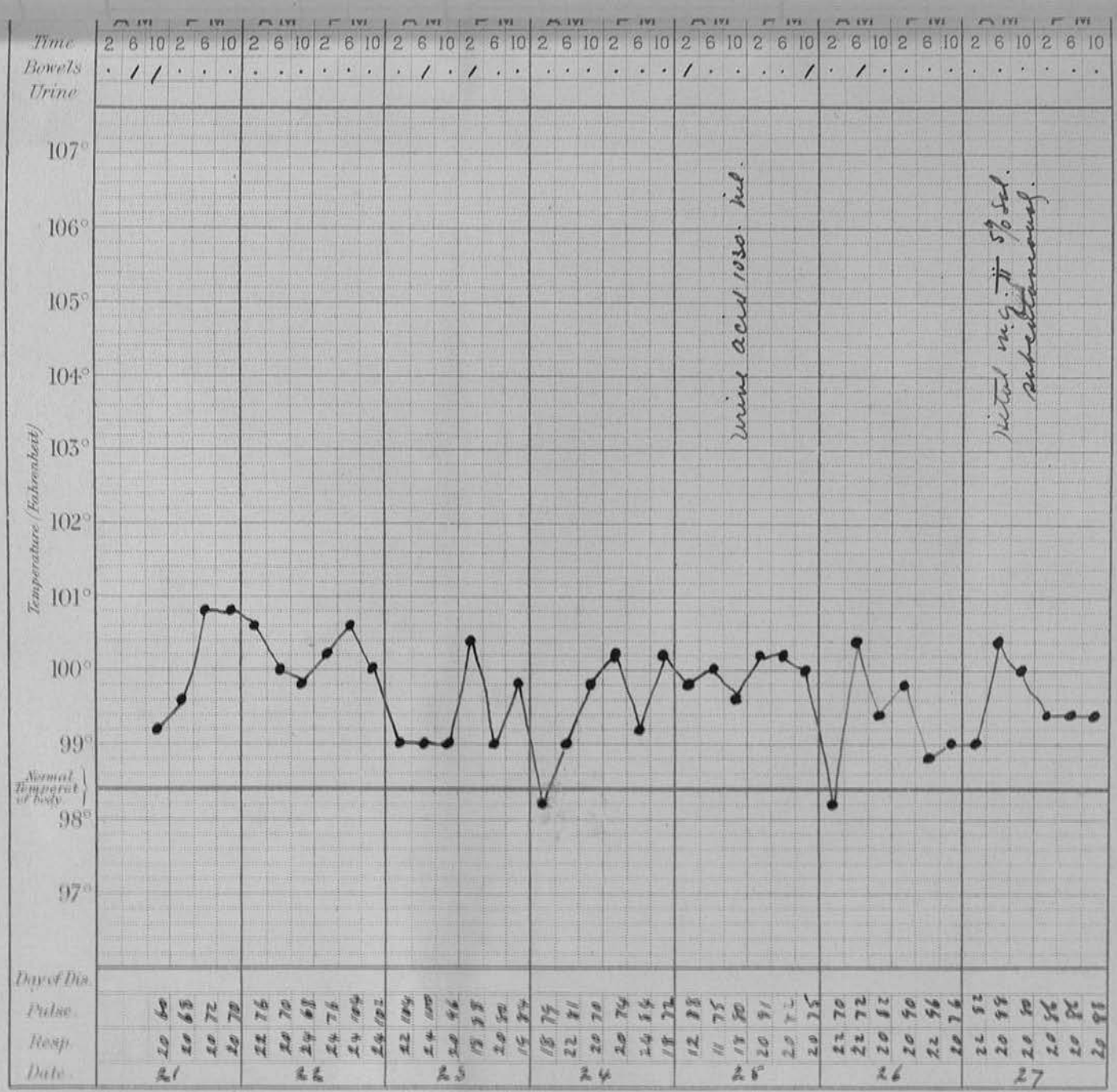
Diet:

Case Book No.:

Notes of Case

Date of admission 21. 1. 08.

Result



Entered at Stationers Hall Jan. Printed and Published by Wakkerspoon & Co 6 Gate Street Lincolns Inn Gaulds Clinical Chart.

4 HOUR CHART.

DISEASE.

Tuberculous Meningitis.

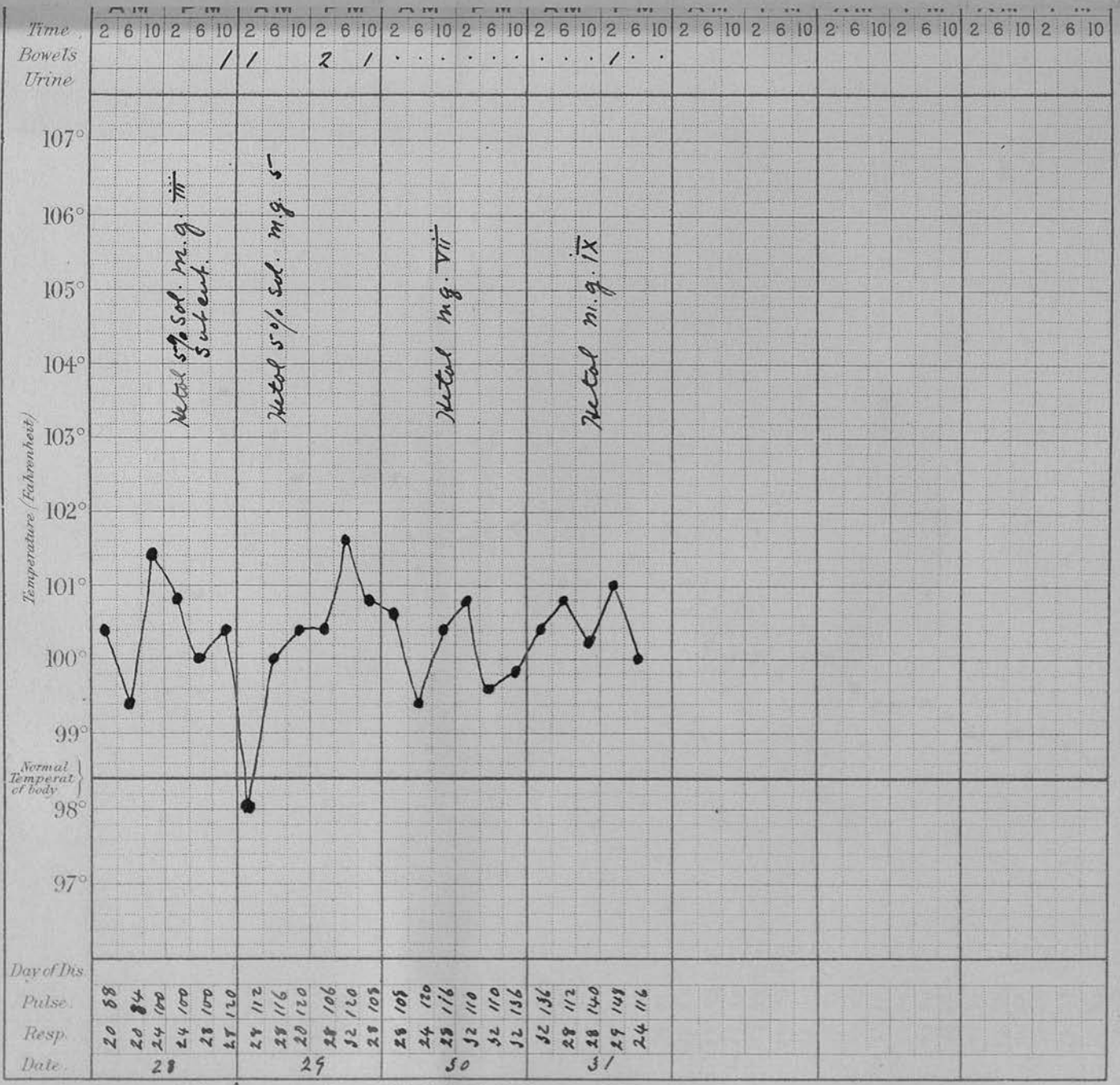
Name { William Sayers

Age 17 years

Diet

Case Book N°

Notes of Case



Date of admission

Jan 21. 1905.

Result

Entered at Stationers Hall Jan. Printed and Published by Wedderspoon & Co 6 Gate Street Lincolns Inn Gould's Clinical Chart.

FEVER CHART.

DISEASE.

Acute Tuberculus Broncho-Pneumonia

Name { William Swarttooi

Age 33 years

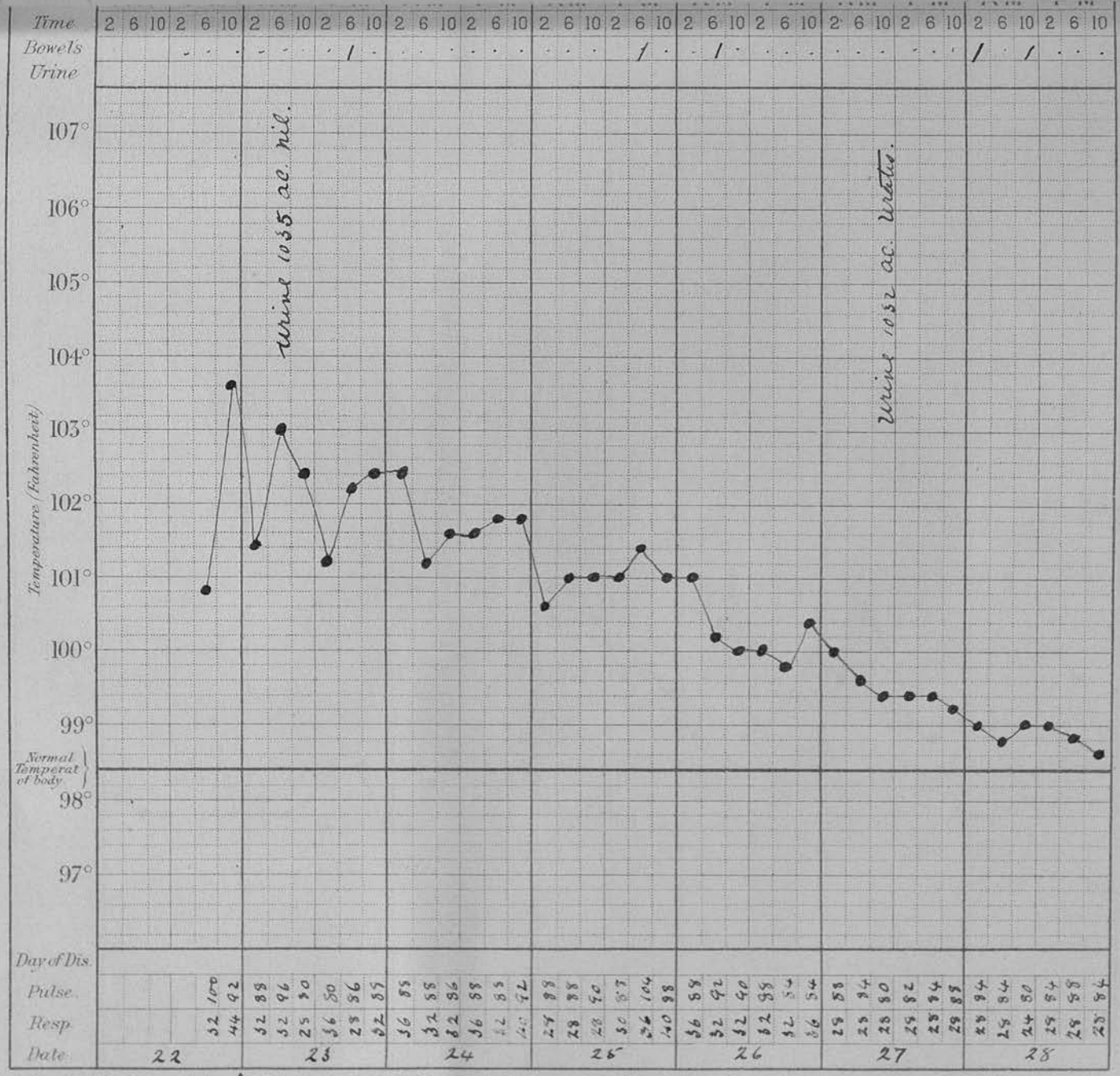
Diet

Case Book No.

Notes of Case

Date of admission Jan 2nd '05

Result



Entered at Stationers Hall. Jan. Printed and Published by Wedderspoon & Co 6. Gate Street Lincolns Inn. Gould's Clinical Chart.

FEVER CHART.

DISEASE.

Intracular Broncho-pneumonia

Name { William Swartbooi

Age 38 years

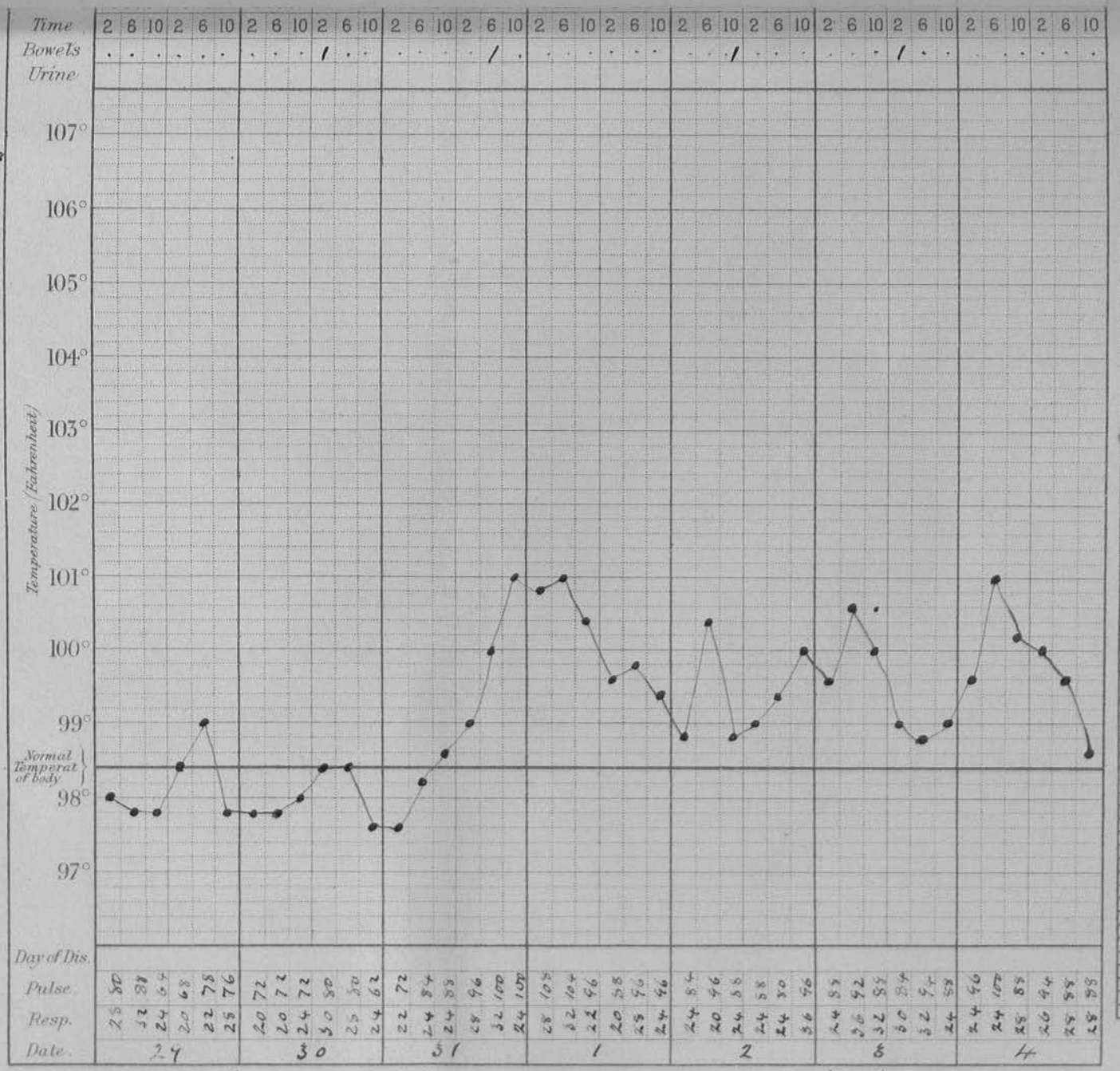
Diet

Case Book No.

Notes of Case

Date of admission 22. 1. 05.

Result



Entered at Stationers Hall Jan. Printed and Published by Wedderspoon & Co 6, Gate Street, Lincolns Inn Feb. Goulds Clinical Chart

4 HOUR CHART.

DISEASE.

Tubercular Broncho-pneumonia

Name: William Swarttvoi

Age: 53

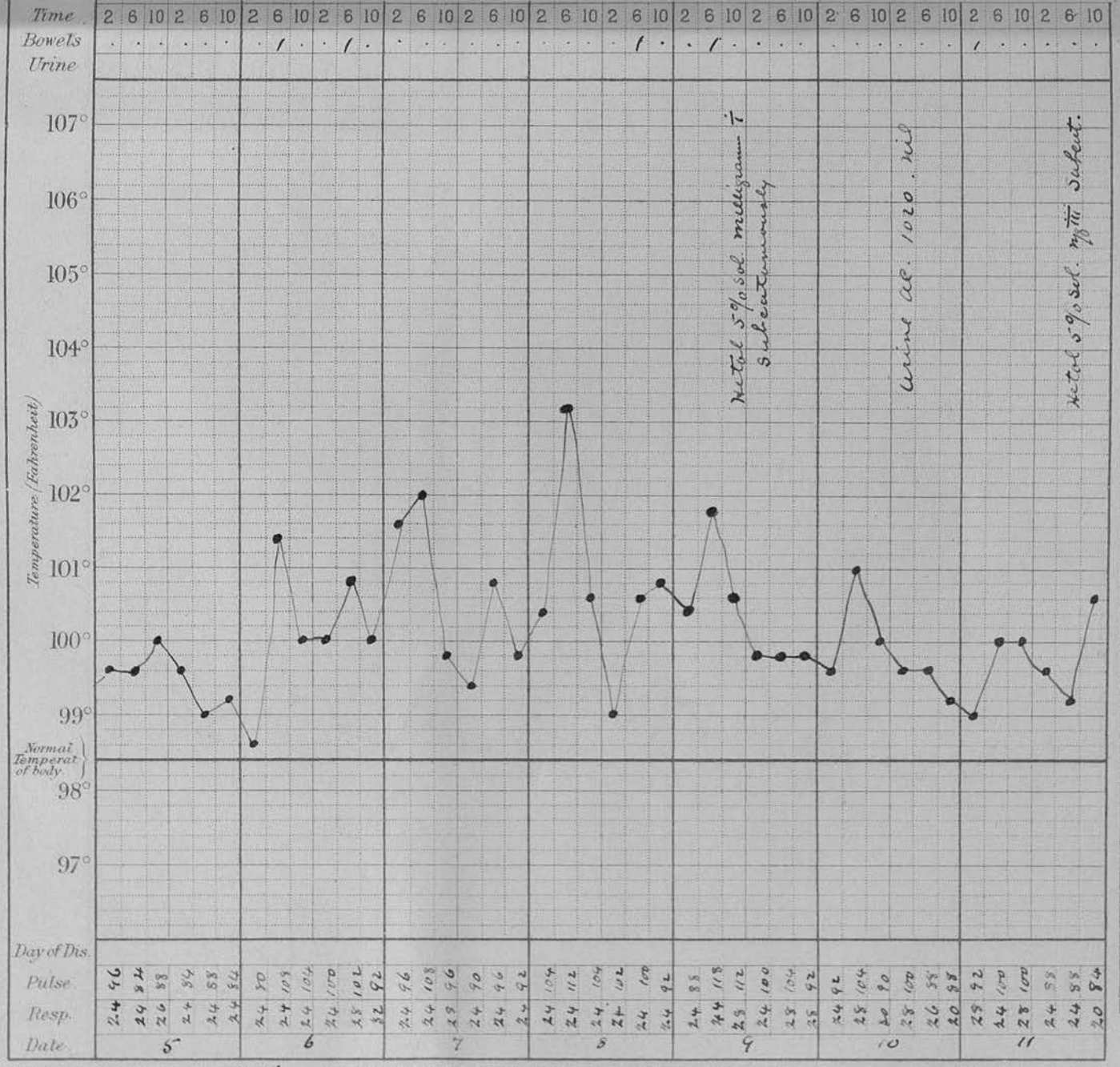
Diet:

Case Book No:

Notes of Case

Date of admission: 22. 1. 03.

Result:



Entered at Stationers Hall 74. Printed and Published by Wodderspoon & Co 6, Gate Street, Lincolns Inn Goulds Clinical Chart

4 HOUR CHART.

DISEASE.

Intercalar Broncho-pneumonia

Name: William Swartbooi

Age: 55.

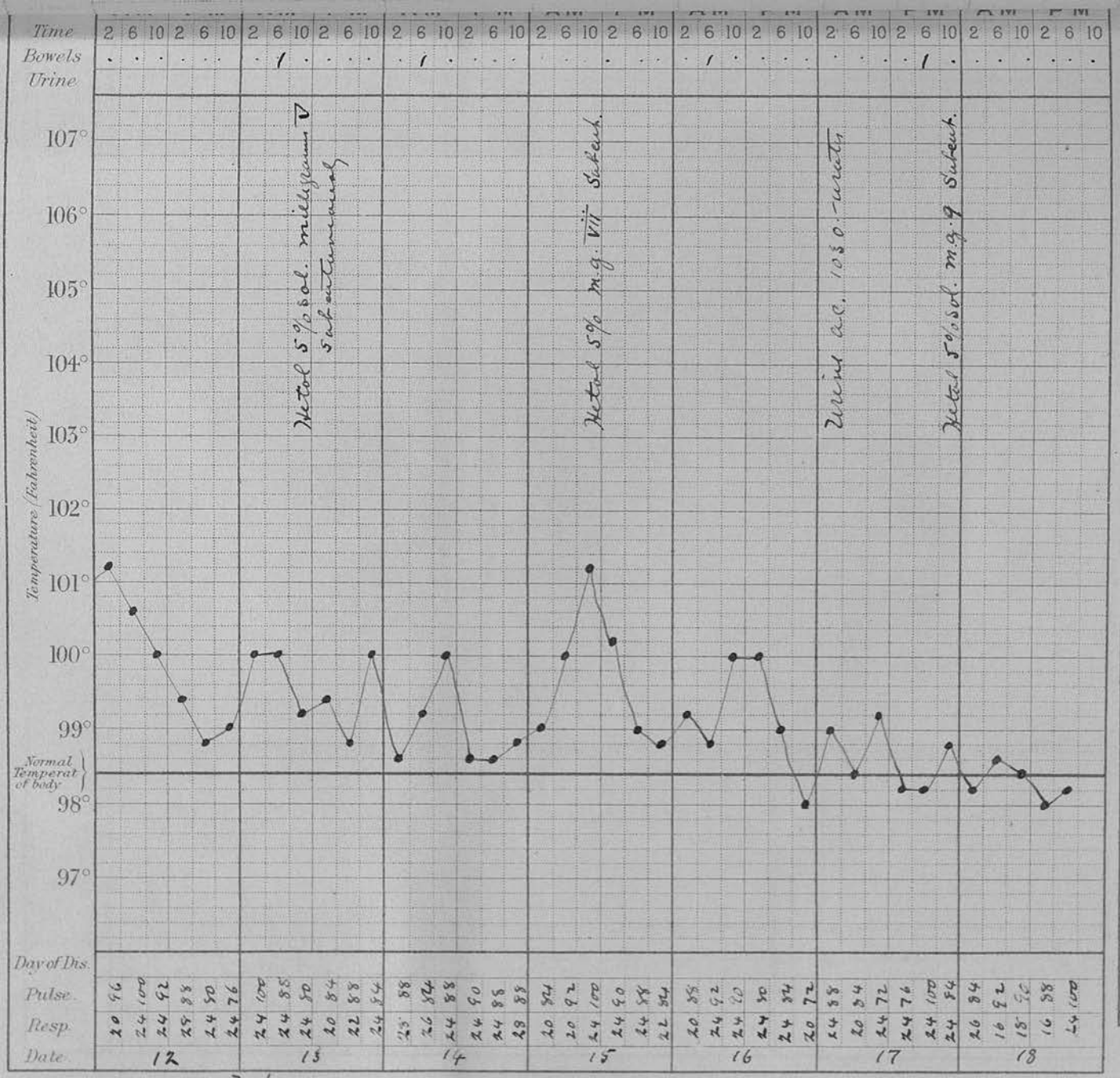
Diet:

Case Book No:

Notes of Case

Date of admission: 12. 1. 08.

Result:



Entered at Stationers Hall 7th. Printed and Published by Wodderspoon & Co 6, Gate Street Lincolns Inn. Goulds Clinical Chart.

DISEASE.

Tuberculas Broncho-pneumonia

Notes of Case.

Name { William Swarbrooi.

Age 33.

Diet

Case Book N°

Date of admission. 22. 1. 08.

Result

Bowels. 1 · 1 1 1 1 1 1 1 1 1 · 1 1

Urine.

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat of body.

Hetol 5·% sol. milligrammo XI Subcut.

Weight 9 St. 1 lbs.

Hetol 5·% sol. m.g. XIII. Subcut

Urine. 1020. ac. nil.

Hetol m.g. XV Subcut

Day of Dis.								
Pulse.	92	84	80	88	88	72	88	88
Resp.	28	28	26	20	24	24	24	24
Date.	19	20	21	22	23	24	25	26

42° 41° 40° 39° 38° 37° 36° 35°

Temperature. (Centigrade.)

Entered at Stationers Hall. 7 et. Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn

Gould's Clinical Chart

DISEASE.

Pulmonary Tuberculosis

Notes of Case.

Name { Agnes Phillips

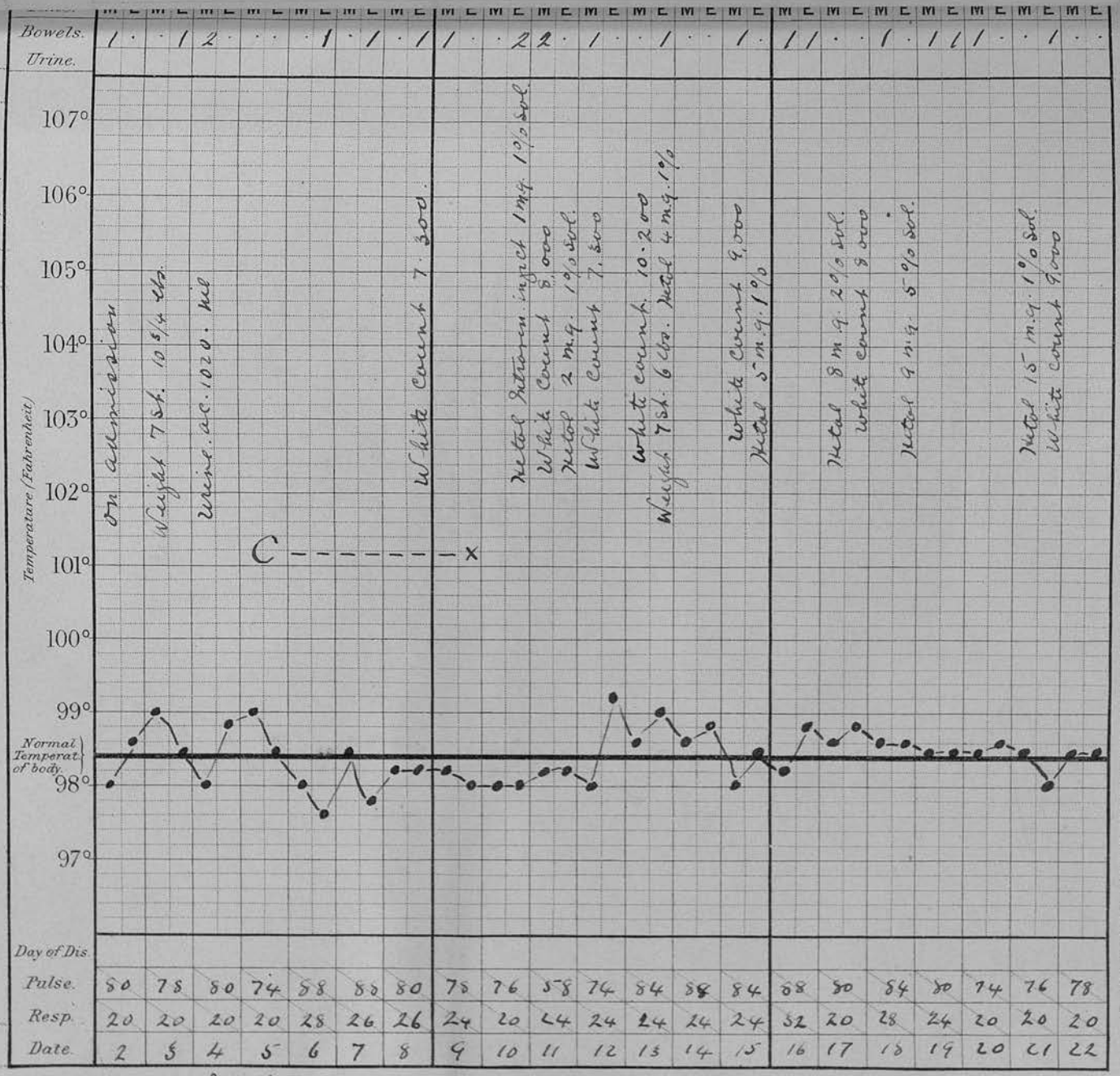
Age 24

Diet

Case Book N°

Date of admission. 2. 12. 02.

Result



Day of Dis.	Pulse.	Resp.	Date.
1	80	20	2
2	78	20	3
3	80	20	4
4	74	20	5
5	88	28	6
6	82	26	7
7	80	26	8
8	78	24	9
9	76	20	10
10	78	24	11
11	74	24	12
12	84	24	13
13	88	24	14
14	84	24	15
15	88	32	16
16	80	20	17
17	84	28	18
18	80	24	19
19	74	20	20
20	76	20	21
21	78	20	22

Entered at Stationers Hall. Dec. 1902. Printed and Published by Wodderspoon & Co. 6, Gate Street, Lincoln's Inn.

DISEASE.

Pulmonary Tuberculosis

Notes of Case.

Name { Agnes Phillips

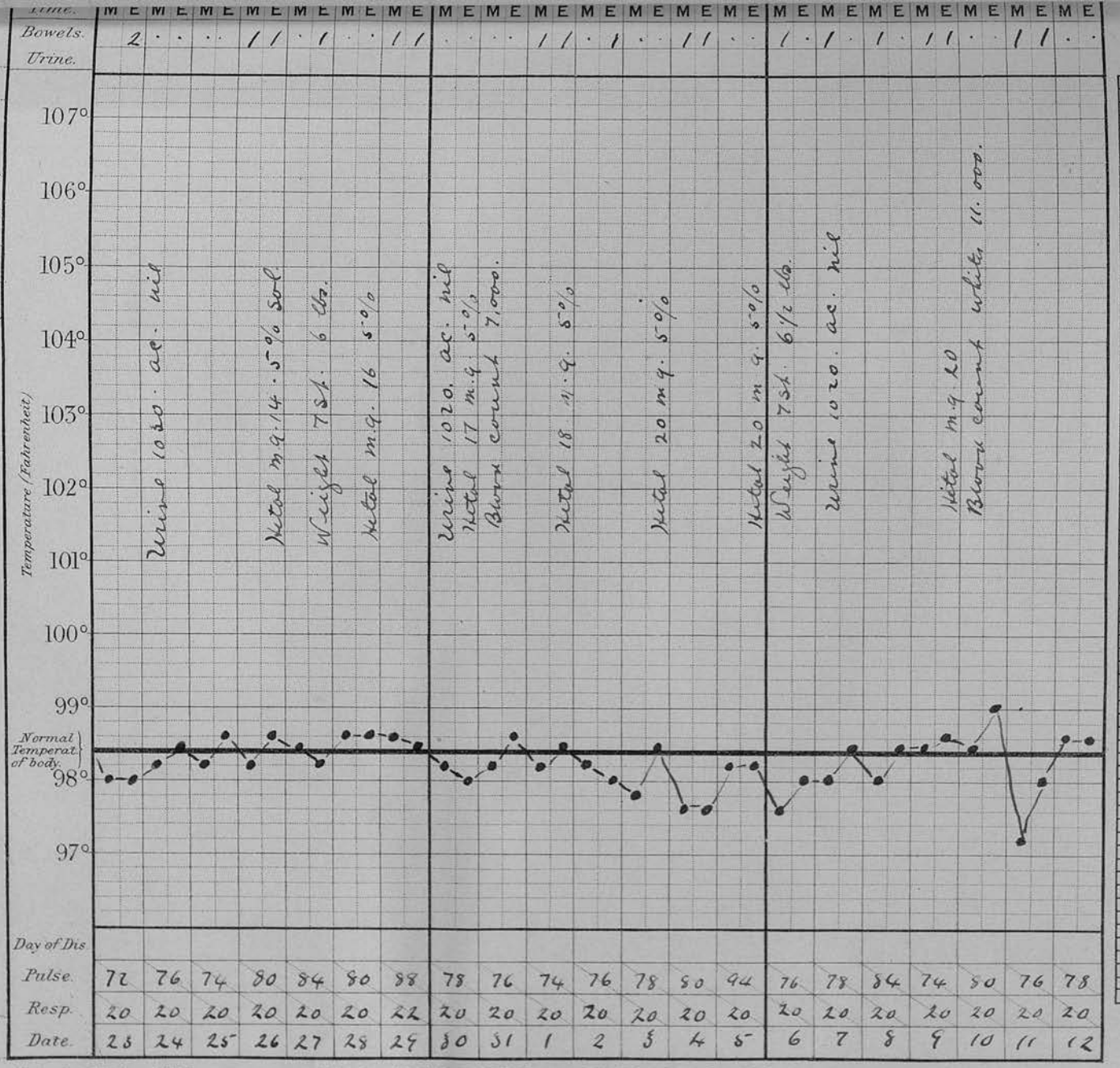
Age 24.

Diet

Case Book No.

Date of admission. 2. 12. 02.

Result



Entered at Stationers Hall. Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn. Jan. 1. 1903 Gould's Clinical Chart.

DISEASE.

Pulmonary Tuberculosis

Notes of Case.

Name { Agnes Phillips

Age 24

Diet

Case Book No.

Date of admission. 2. 12. 02.

Result

Bowels. · 1 1 1 · · 1 1 · 1 · · 1

Urine. Urine ac. 1030. Nil. White Count 7.400

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat. of body

Day of Dis.

Pulse.	78	80	78	74	84	84	88
Resp.	20	20	20	20	20	20	24
Date.	13	14	15	16	17	18	19

42° 41° 40° 39° 38° 37° 36° 35°

Temperature. (Centigrade)

Entered at Stationer's Hall. Jan. 1903 Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { Edward Cowgens

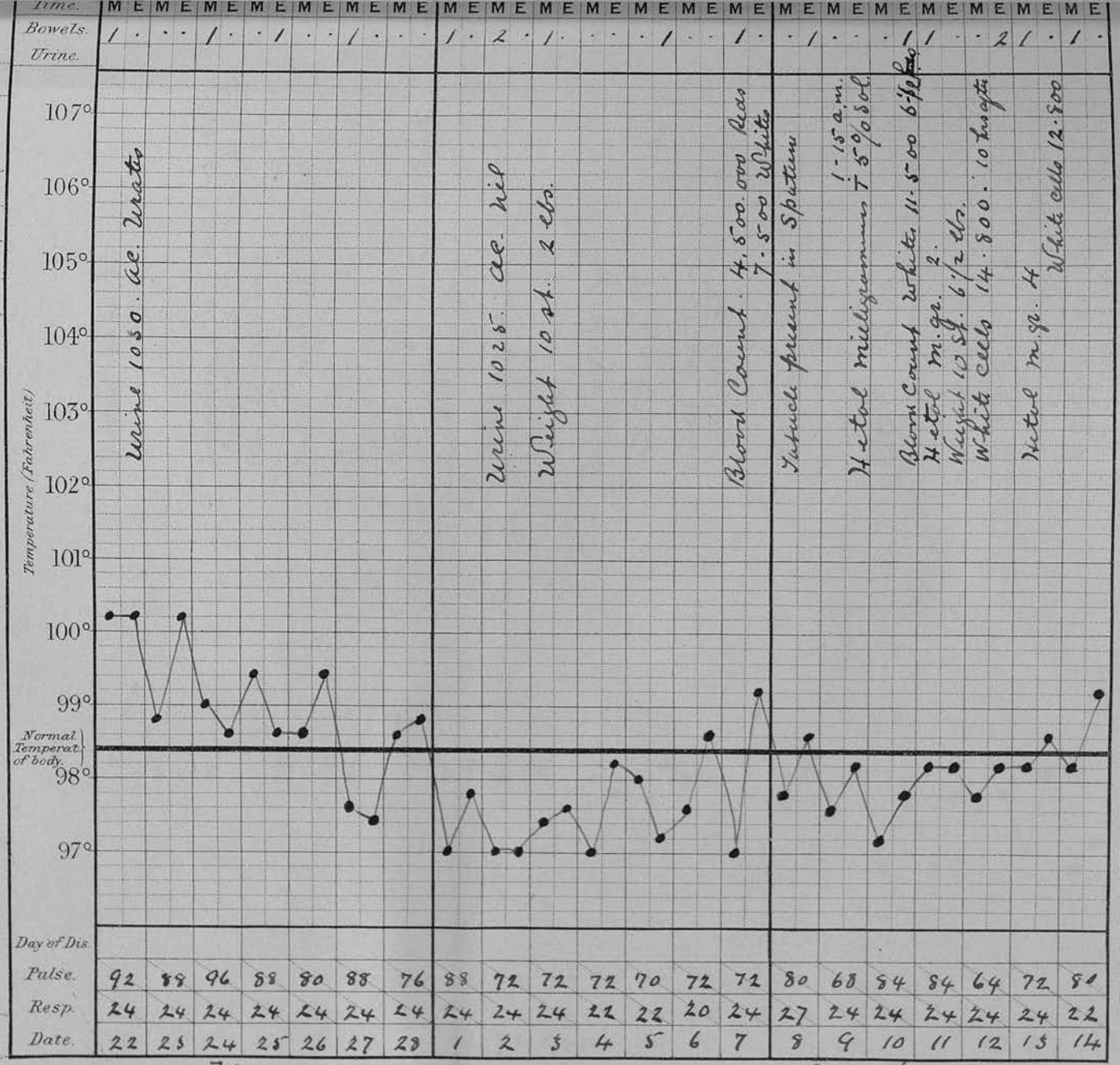
Age 37.

Diet

Case Book No.

Date of admission. 22 · 2 · 1903.

Result



Day of Dis.																									
Pulse.	92	88	96	88	80	88	76	88	72	72	72	70	72	72	80	68	84	84	64	72	84				
Resp.	24	24	24	24	24	24	24	24	24	24	22	22	20	24	27	24	24	24	24	24	22				
Date.	22	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14				

Entered at Stationers Hall. February Printed and Published by Wodderspoon & Co. 6, Gate Street, Lincoln's Inn. March Gould's Clinical Chart.

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { Edward Conyers

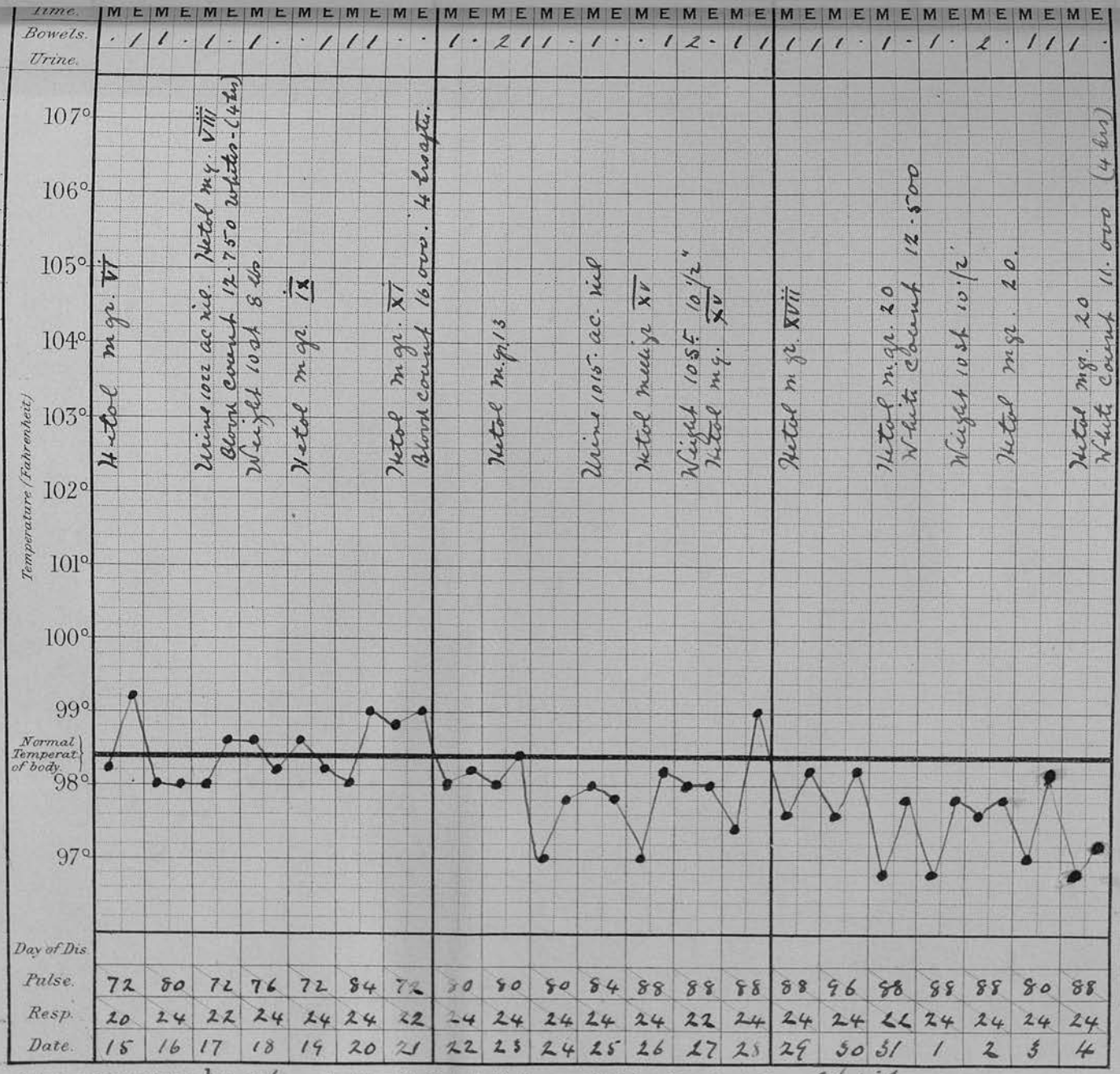
Age 37.

Diet

Case Book N°

Date of admission. 22. 2. 08.

Result



Entered at Stationer's Hall. March

Printed and Published by Wodderspoon & Co. 6 Gate Street. Lincoln's Inn. April

Gould's Clinical Chart.

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { Edward Cougens

Age 37 years

Diet

Case Book N°

Date of admission. 22. 2. 03.

Result

	M E	M E	M E	M E	M E	M E	M E
Bowels.	1 ·	1 ·	1	1	1 ·	2 ·	1 ·	1 ·
Urine.			Urine ac. 1020 Mild					
Day of Dis.	5	6	7	8	9	10	11
Pulse.	80	80	88	80	76	88	88
Resp.	27	24	24	24	24	24	24

Temperature (Fahrenheit): 107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat. of body.

Temperature. (Centigrade.): 42° 41° 40° 39° 38° 37° 36° 35°

Entered at Stationer's Hall. April Printed and Published by Wodderspoon & Co. 6. Gate Street. Lincoln's Inn.

Gould's Clinical Chart

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { William Tharpe

Age 39

Diet

Case Book N°

Date of admission. 5 · 12 · 02.

Result

Time.	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E	M E
Bowels.	1	·	11	1	1	1	·	·	1															
Urine.																								

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat. of body.

On admission. Weight 10 St. 7 lbs.

Urine ac. 1024. nil.

Blood Count Red 4. 600. 000. White 8,000.

Day of Dis	72	66	60	64	68
Pulse.	52	28	26	28	28
Resp.					
Date.	5	6	7	8	9

Temperature. (Centigrade.)

42° 41° 40° 39° 38° 37° 36° 35°

Entered at Stationers Hall. Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn. Gould's Clinical Chart.

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { William Sharpe

Age 39

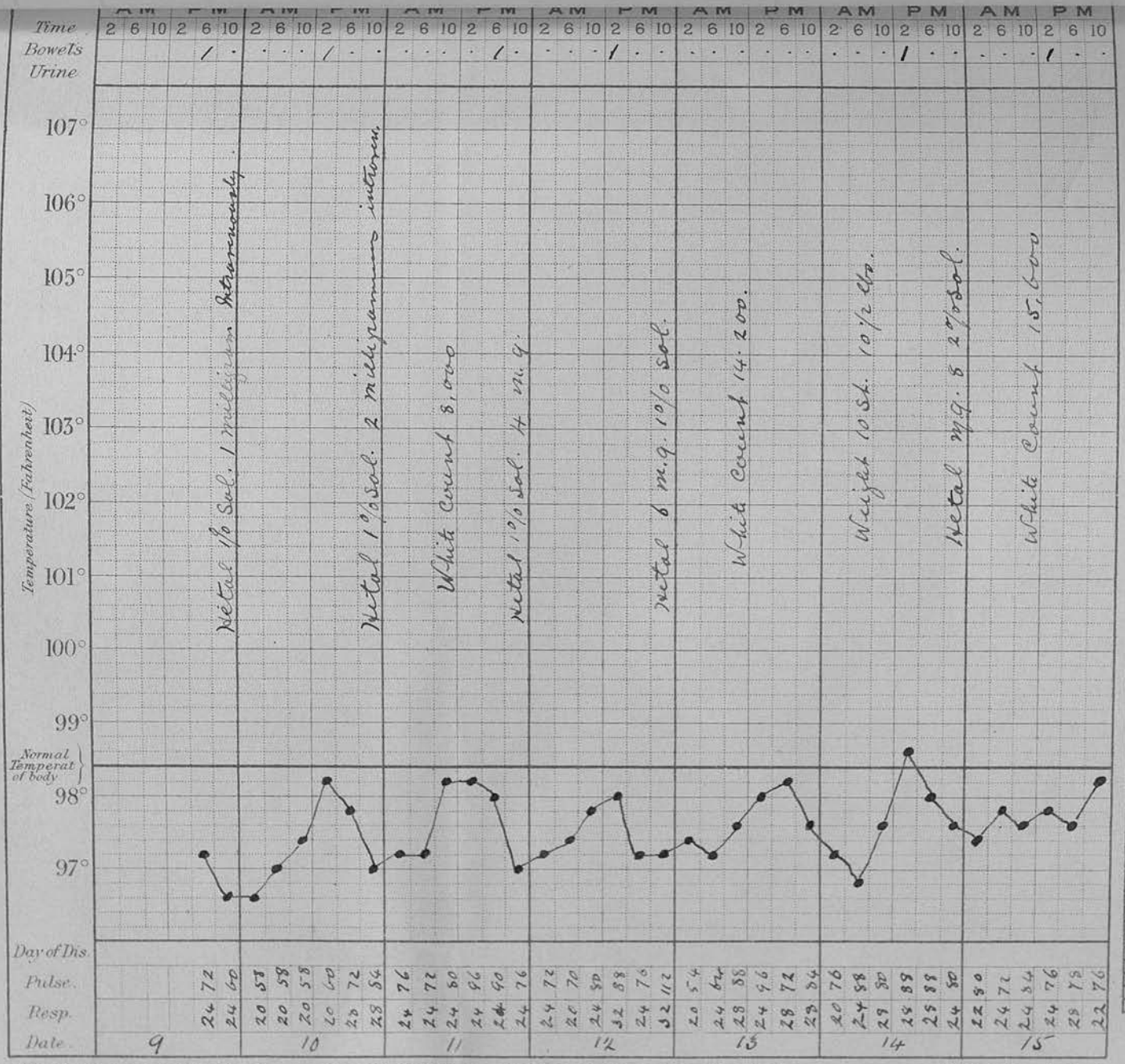
Diet

Case Book N°

Notes of Case

Date of admission 5. 12. 02.

Result



Entered at Stationers Hall Dec. Printed and Published by Wodderspoon & Co 6, Gate Street Lincolns Inn. Goulds Clinical Chart.

4 HOUR CHART.

DISEASE.

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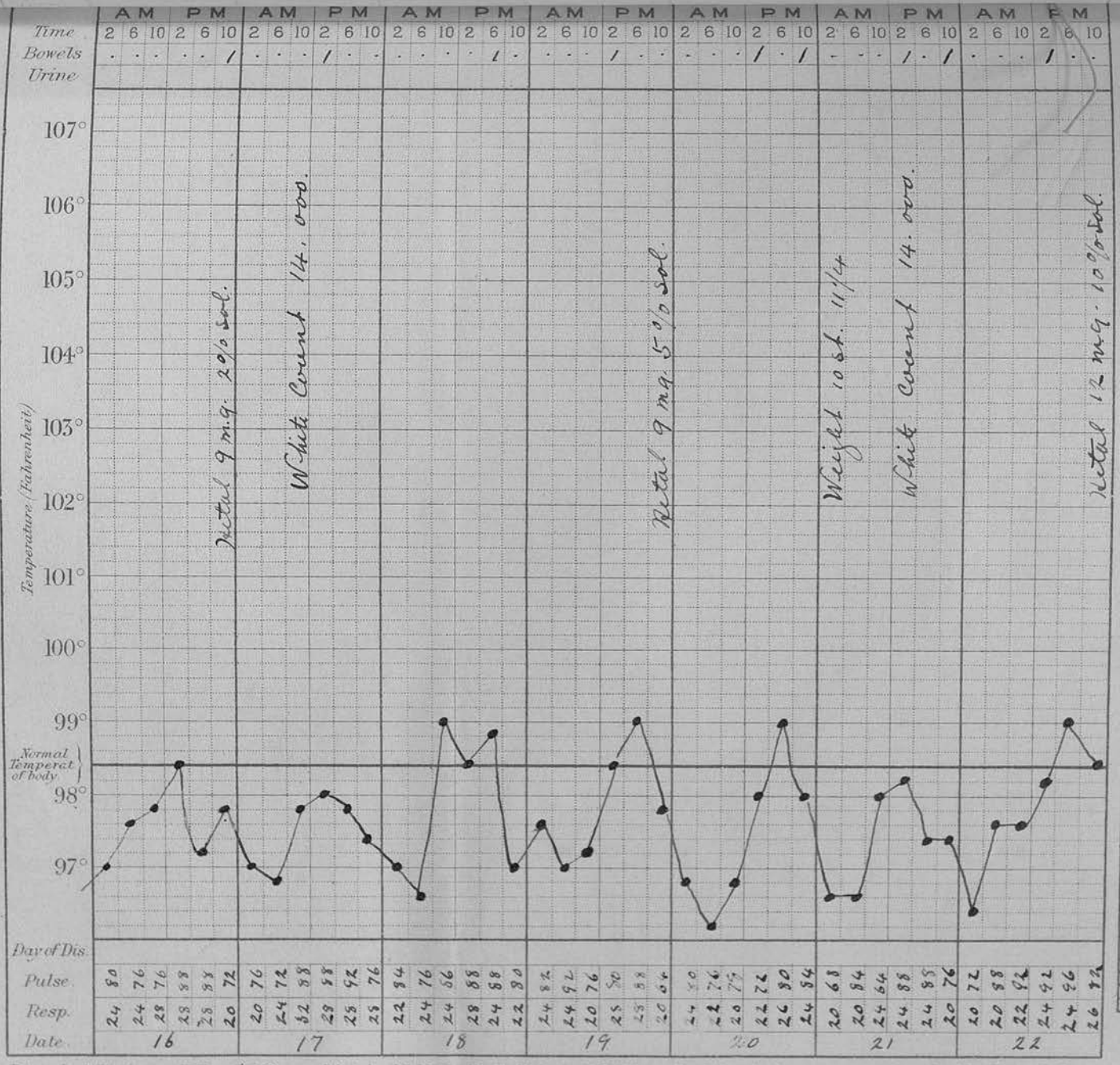

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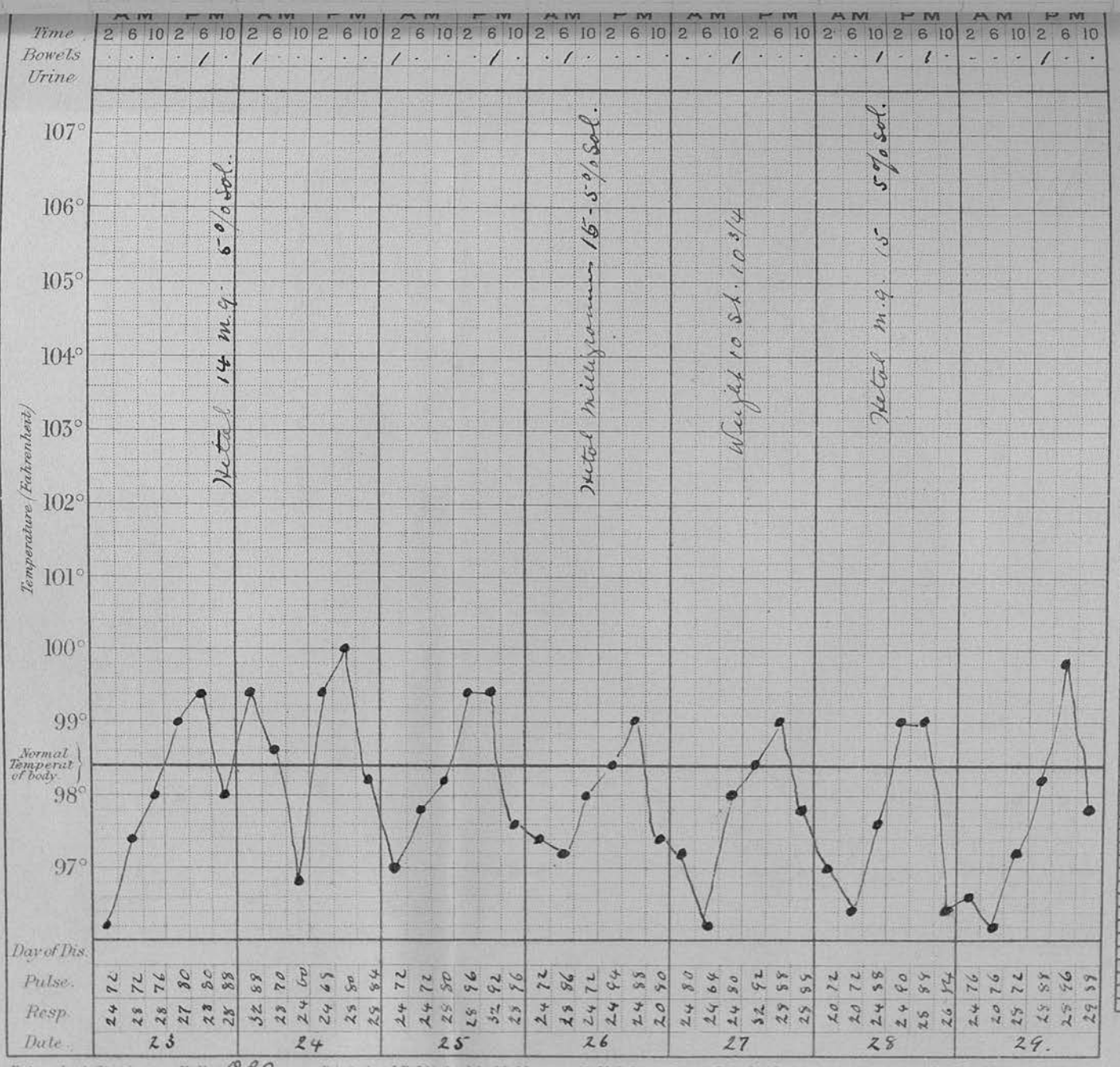

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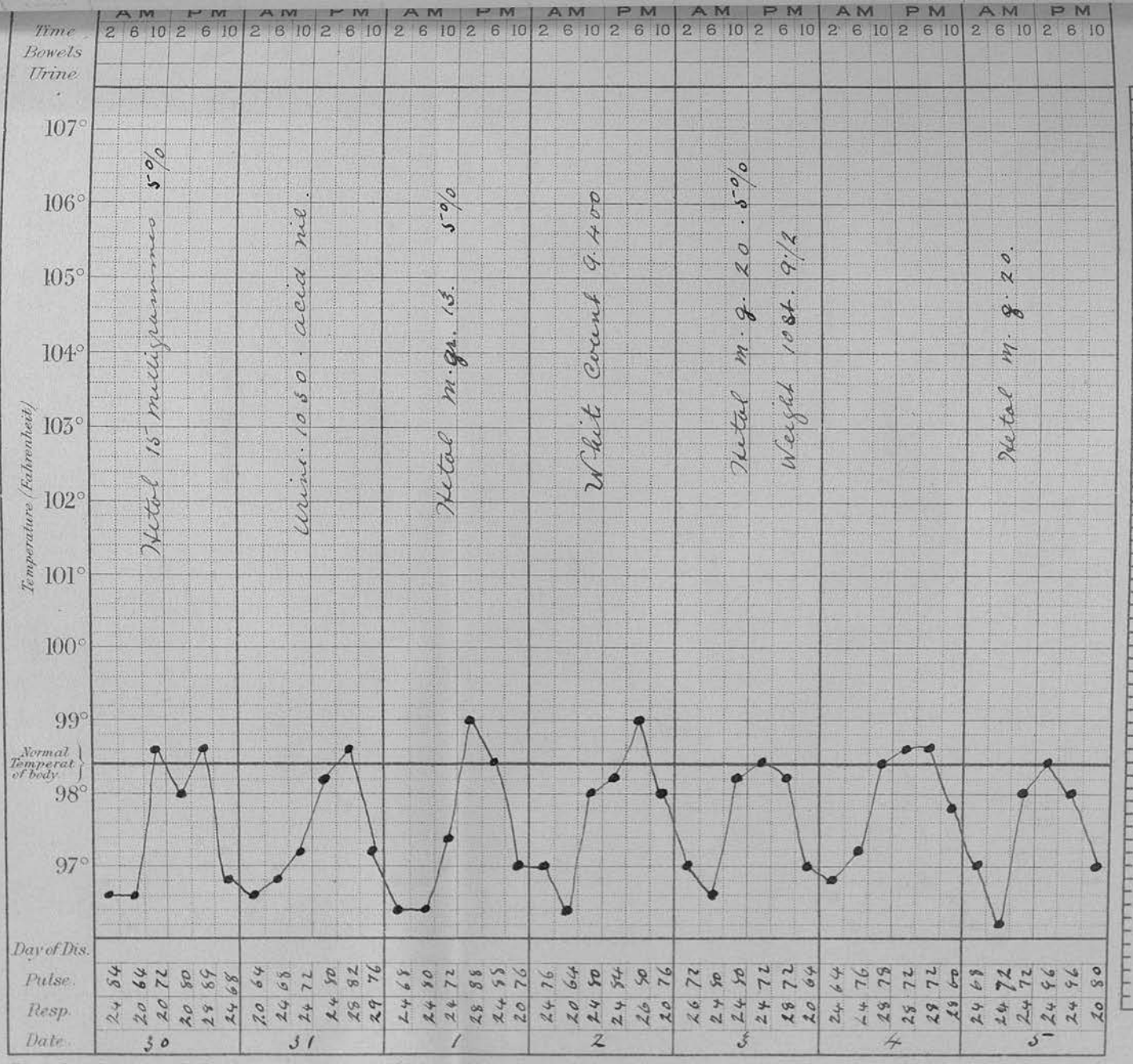

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Entered at Stationers Hall. Printed and Published by Wedderspoon & Co 6, Gate Street Lincolns Inn Fields Jany. 1903 Gould's Clinical Chart.

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Phthisis Pulmonalis

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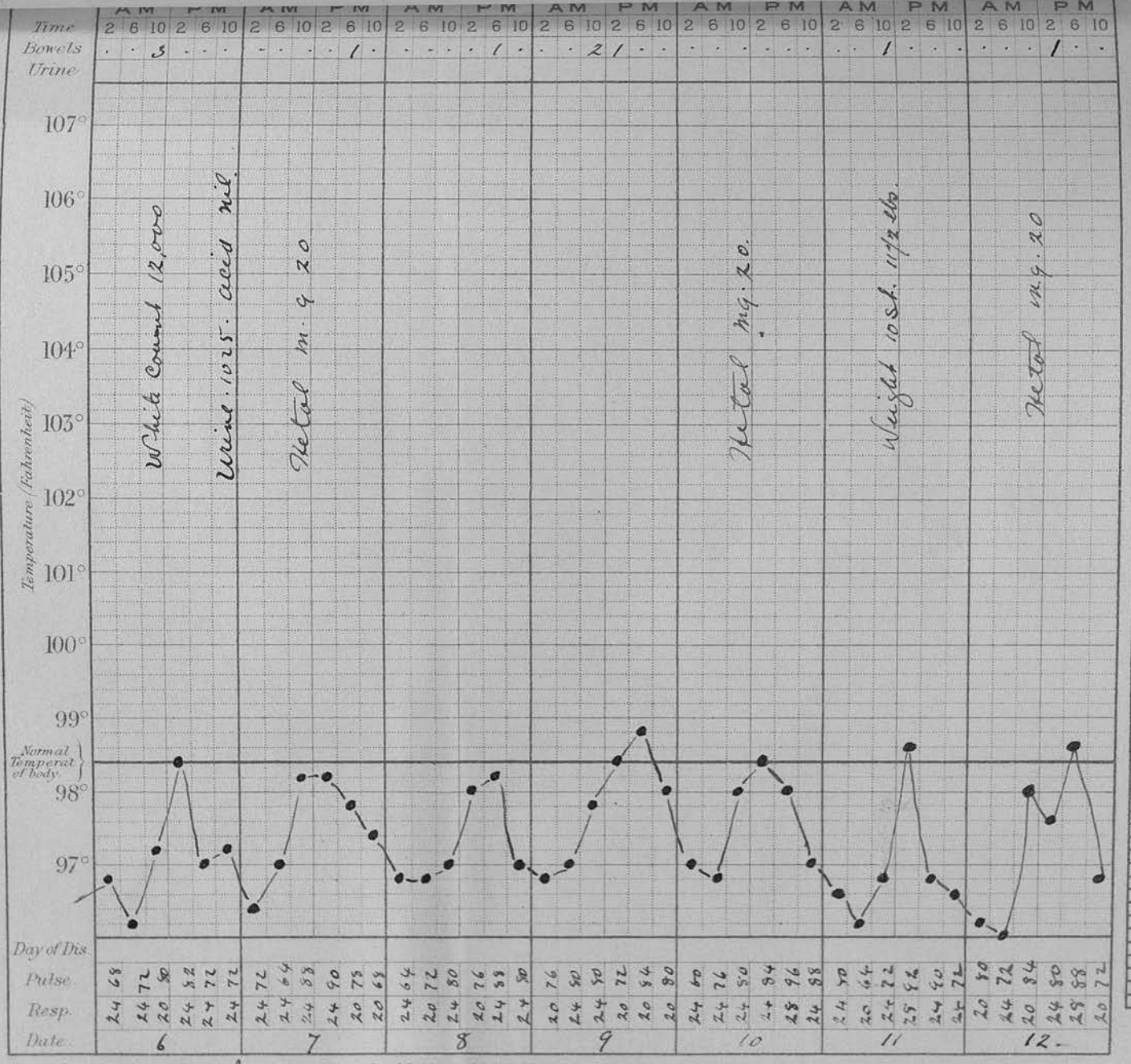

Entered at Stationers Hall Jan. 1903. Printed and Published by Wodderspoon & Co. 6. Gate Street, Lincolns Inn. Goulds Clinical Chart.

4 HOUR CHART.

DISEASE.

Phthisis Pulmonalis

Name { William Thorpe

Age 39.

Diet

Case Book No.

Notes of Case

Date of admission

5. 12. 02

Result

Time | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10 | AM 2 6 10 | PM 2 6 10

Bowels

Urine

Temperature (Fahrenheit)

107°

106°

105°

104°

103°

102°

101°

100°

99°

Normal Temperat of body

98°

97°

Temperature (Centigrade)

42° 41° 40° 39° 38° 37° 36° 35°

Day of Dis.

Pulse 76 72 72

Resp 20 28 24

Date 15

Entered at Stationers Hall. Jan. 1903 Printed and Published by Wodderspoon & Co 6, Gate Street, Lincolns Inn.

DISEASE.

Phthisis Pulmonalis

Notes of Case.

Name { William Sharpe

Age 39.

Diet

Case Book No.

Date of admission. 5. 12. 02.

Result

		M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E
Bowels.		2	·	2	·	1		1		1	·	1		1		1	·	·	1	·	1	·	1	·	1	1	1
Urine.																											
Day of Dis.		-																									
Pulse.		72		80		80		92		80		96		88		80		88		80		84		72		88	
Resp.		24		24		24		24		24		24		24		24		24		24		24		24		24	
Date.		13		14		15		16		17		18		19		20		21		22		23		24		25	

Temperature (Fahrenheit)

107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97°

Normal Temperat. of body.

Urine. 1025 ac. nil

Weight 10 st. 13 lbs.

White Count 8800

Urine ac. 1020. nil.

Weight 10 Stones

42° 41° 40° 39° 38° 37° 36° 35°

Temperature. (Centigrade.)

Entered at Stationers Hall. Jan. 1903. Printed and Published by Wodderspoon & Co. 6 Gate Street Lincoln's Inn.

Gould's Clinical Chart.

Since the introduction of Prof: Landerer of Stuttgart in 1888 of Cinnamic Acid and its derivatives in the treatment of Tuberculosis, many and varied results have been obtained by the Medical Profession in this country and abroad, especially in Germany and Switzerland where the treatment has been much more successful.

Cinnamic Acid and its salts have a very definite chemiotactic action when injected into the tissues, whether intravenously or subcutaneously. Professor Landerer has shown that they produce a leucocytosis of double the number of leucocytes found in normal blood. In the treatment of the cases to be mentioned, this has been verified.

This discovery led to the use of Cinnamate of Soda in Tuberculosis, in which leucocytosis does not occur unless where mixed infection has taken place. Effects produced in the tissues :-

Two to four hours after the intravenous or subcutaneous injection of Cinnamic Acid Solutions a marked increase in the white corpuscles is evident, the polynuclear and eosinophil cells being those chiefly affected.

The maximum leucocytosis is reached in four to eight hours after injection. An aseptic inflammation is set up around the tuberculous foci in the lungs, or other tissues affected; the blood vessels dilate and emigration of leucocytes takes place into the surrounding tissues, connective tissue cells proliferate, small blood vessels form, and young granulation tissue develops around the tuberculous areas. At the same time organisation of the centre of the tubercle nodule progresses. Young connective tissue forms, and gradually invades the diseased tissue, later on forming fibrous tissue, which gradually contracts, causing the tuberculous area to shrink, and entirely replaces the original structure.

Calcification may also follow.

Besides this separation and cicatrisation of the larger tuberculous centres, an interstitial pneumonia takes place in the alveolar septa of the lung - which at the outset become permeated with leucocytes; gradually, connective, and then fibrous tissue forms, causing the septa to increase several times their original size.

This healing process is quicker than the natural one, but, the tissue is formed more quickly

and is more compact.

The same process of vascularization and organisation occurs in the peritoneum and lymphatic glands. Tubercle bacilli which are unaffected by the process at first, become scarcer and more difficult to find in the sputum, and gradually disappear if the treatment is persisted in. *

Technique of intravenous injection :-

Sodium Cinnamate cannot be used for intravenous injection unless synthetically prepared as Hetol, as the former is insoluble. Hetol is easily soluble in neutral or Alkaline Solutions, giving a colourless solution when filtered. The solutions which I have used are one and five per cent Hetol in 0·7 saline solution, either neutral or faintly alkaline. The solution must be filtered and quite clear.

Before use, the solutions should be sterilized in a water bath, or by a spirit lamp &c. for at least five minutes. The sterile solution can be stored in wide necked bottles plugged with cotton wool covered by muslin.

The veins in front of the arm over the anti-

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* Landerer. The Treatment of Tuberculosis by Cinnamic Acid, Leipzig 1898.

cubital fossa are those usually selected for injection. I have cleansed the skin by soap and water, then by ether and carbolic lotion 1 in 20, followed by a Carbolic compress 1 in 40 applied for four hours previous to injection. The compress may be omitted, and the skin cleansed as above mentioned.

An elastic or ordinary dressing bandage is used to render the veins prominent, as in venesection and applied in the upper third of the forearm.

The syringe I used was that of Pravaz graduated in milligrammes, with fine and sharp needles. Before use it is sterilized by boiling, and kept in sterile water, or Spiritus Rectificatus.

The arm having been sterilized is placed in a sterilized towel in a horizontal position, with the arm fully extended to render the veins prominent, as the lumen is more easily entered in that condition. Having selected a vein which is usually the median basilic or median cephalic or their tributaries, the syringe is held parallel to the longitudinal axis of the vein to be injected, and the needle passed into it by a quick stab at an oblique angle to the surface. If the lumen of the vein has been entered, the cannule will move freely

when rotated from side to side, and no swelling will follow the injection; while the fluid is passing into the vein it is accompanied by a slight hissing sound. This does not occur if the vein is not entered, and, the part injected is then seen to be swollen as the fluid has only passed into the subcutaneous tissue.

A slight stinging sensation follows the injection for a few minutes. No other discomfort is complained of, and, no permanent injury to the vein results. I have seen no toxic results follow the use of Hetol.

Prof: Landerer however, states that it should not be used for at least 14 days after haemoptysis. I have used fairly large injections after a much shorter interval without any untoward effects. Hetol injected subcutaneously produces similar, if not so rapid results. The sites usually selected are, the upper and back part of the buttocks, or the cellular tissue around the breasts.

The Solutions of Hetol which I have used were 1 and 5% in 0·7 saline solution - (the solution being always heated to 99° F. before injection.)

The one per cent solution was used for several preliminary injections, before proceeding to the

five per cent solution.

I have also used both of these solutions subcutaneously, and Sodium Cinnamate itself in 10% Glycerine Solution as it is insoluble. However, this injection always caused some pain, but, not nearly so much, as when injected in watery solution; in both intravenous and subcutaneous injections, the usual increase being one milligramm and the injection given every second day. If given every day the reaction produced is too great, and a process of inflammation is set up around the tuberculous foci, which would add to, instead of diminishing the activity of the disease, also, rendering the patient liable to the dissemination of tuberculosis throughout the body, owing to the tubercle bacilli and products entering the blood stream.

The maximal dose is 20 to 25 milligramms of Hetol 5% solution, and may be continued for a year or more according to the condition of the patient. Improvement in the patient's condition begins to shew itself about the third week of treatment - sometimes sooner.

In order to prevent fallacy in the enumeration of leucocytes, I have either taken one or two preliminary counts previous to the use of Hetol.

This has always been done in the morning early, after the patient has fasted all night, the count being always taken at a similar time afterwards. Or the preliminary counts may be taken at any time, provided the same time is always selected for the subsequent counts during the treatment by Hetol.

In female patients blood counts have been avoided during the menstrual period, and its onset, owing to the very marked leucocytosis which I have always found to occur then, and for several days before its onset.

The diet prescribed for the patient was the same as he or she was accustomed to, with no extras whatever.

Drugs also have been avoided during the treatment, unless aperient, given on other days than those on which the counts were taken, in order that no fallacy might occur. During the course of treatment by Hetol injections, the patients have been allowed out of bed most of the day if their condition permitted; and, only moderate exercise, partly outdoor, was allowed.

The active tissue change which takes place around the tubercular foci, and the surrounding

vascularity and proliferative change is so rapid that haemorrhage has resulted after undue exercise. This has not occurred to any of my cases, but Prof: Landerer lays great stress on this point.

The Thoma-Zeiss Haemocytometer was the instrument which I used in estimating the corpuscles.

The injections of Hetol were given at night, and the blood taken for estimation 4 or 8 hours afterwards, no food being taken in the interval.

In each enumeration of leucocytes by the Thoma Zeiss Haemocytometer 2,000 squares were counted on each occasion in order to avoid inaccuracy.

× × × × ×

Appended are the notes of the cases treated, with short synopsis of each. Also the charts on which the Hetol injections are recorded.

WILLIAM THORPE.

Admitted, December 12th, 1902.

Occupation :- Railway Porter.

Age 39.

Family History :- Father died of cerebral haemorrhage. Mother alive and well. Three brothers and four sisters. All in good health. Married. Four children. All are delicate, and suffer frequently from colds.

Hereditary Tendencies :- None of tubercle ascertainable.

Previous Illnesses :- Pneumonia in October 1896, and, was ill till May 1897. He says his doctor told him he had chronic pneumonia.

Present Illness :- He had good health till December 31st, 1901, when the cough returned, and sputum was frequently tinged with blood - for about 3 weeks at onset. Since then cough became gradually worse, and sputum more copious, but, he continued at work till 10 weeks ago. Has been an out-patient of this Hospital since onset of this attack.

No sweating, but very marked loss of flesh

since December 31st. 1901. Says he often has "cold chills." Complains of dull aching pain over lower ribs on anterior and posterior aspects of left chest. No haemoptysis lately.

Condition on Admission :- Tall lean man, hair and moustache turning grey, rather pale, somewhat anaemic. Development fairly good. Expression placid. Temperature normal. Pulse 72. small and regular.

Respiratory System :- Cough frequent, hacking in character, and worse in morning, sputum muco-purulent, nummular masses, yellowish green in colour, frothy upper layer. Slight dyspnoea. Slight pain over lower costal arches in axillary and mammary regions on left side. Chest long and rather narrow, movement impaired over each apex, but most marked at right apex. Supra and infraclavicular hollowing at right apex.

Percussion :- Note high pitched and much impaired all over right apex anteriorly and posteriorly, reaching to third rib in front. Note also impaired over left apex anteriorly and posteriorly, but not nearly so marked there. Slight retraction of right apex - about ½ inch.

Auscultation :- Cavernous breathing at right apex, and, bronchial in character at left. Expiration much prolonged and harsh over lower part of right lung. Accompaniments - loud dry metallic crepitations and moist sounds over right apex. Dry metallic clicking crepitations heard at left apex, but no moist sounds. A few dry crepitations heard over posterior aspect of right base, most marked at end of inspiration. Vocal vibration much increased all over right apex, and slightly increased at right base posteriorly, also slightly increased at left apex anteriorly. Vocal resonance pectoriloquous at right apex anteriorly and posteriorly. Broncophony heard at left apex. Vocal resonance rather nearer th~~ose~~an normal over right ~~apex~~base.

Circulatory System :- Apex beat in 5th. space in normal position. Heart not enlarged. Auscultation :- First sound in mitral area, faint but pure. Second sound accentuated in pulmonary and aortic areas. No murmurs. Pulse regular in time and force, wave small tension between beats low. Vessel wall unaltered.

Urinary System :- Micturition rather more frequent than normal. He requires to get up at night once or so. No abnormal constituents found. S.G. 1023, acid.

Alimentary System :- Tongue clean, slightly dry, secretions scanty. Teeth not good, posterior molars carious. No dyspepsia. Bowels regular, motions normal in colour.

Abdomen :- nil on inspection. Liver slightly enlarged, reaching one inch below costal margin, not tender. Nervous system normal.

NOTES ON PROGRESS :-

Dec: 5th. Sputum examined and tubercle bacilli found to be numerous.

" 8th. Blood count taken in morning while fasting. Red cells 4·600,000. White cells 6,000.

" 9th. Hetol intravenous injection commenced, 1 milligramm of 1% Solution injected into left median basilic vein.

" 10th. No discomfort, and no alteration in temperature. Subsequent Hetol injection marked on charts.

" 12th. Sputum less, and patient says he feels better.

Dec:13th. White cells reached - 14·200 after 6 milligramms of Hetol. All the counts were done in following morning while fasting, Hetol being injected about 10 p.m.

" 20th. Temperature subnormal at 6 a.m. 96° F. He feels well. Very little sputum.

" 21st. Has perspired in night for first time since admission. Coughed a little more in morning. Lung condition same. Gaining in weight - 1 lb.

" 23rd. He looks better and has more colour. Temperature at 6 a.m. 99·4° F.

" 27th. Temperature has usually been subnormal at 6.a.m and slightly elevated at 6 p.m. Patient feels well - sputum still scanty, about 3ʒ in 24 hours.

1903

Jan: 4th. He says his breathing feels better. No pain. Tubercle bacilli in numbers still in sputum.

" 8th. Patient feels much better. All moist sounds have disappeared from right apex, only dry crepitations audible. Breathing bronchial. Left lung - still a few crepitations, no moist sounds. No sign of active excavation.

Jan:17th. Improving. He says that he feels better every day. Has gained in weight 3½ lbs. White count taken five days after Hetol treatment ceased. 8·800 white cells obtained.

" 25th. Weight has increased by 1. lb. since Jan: 17th.

" 27th Sent to Convalescent Home belonging to the Sussex County Hospital, near Brighton.

Feb:10th. Has returned from Convalescent Home; he looks better, and has put on flesh. Cough very slight, very little sputum. No moist sounds audible in either lung and dry crepitations less marked. Movement of chest improved.

S U M M A R Y

On admission, this patient had marked evidence of cavitation and active disintegration at right apex, while left apex showed signs of consolidation. No haemoptysis, sputum copious, muco-purulent and nummular. Tubercle present in numbers. Appetite good, but considerable loss of flesh of late. No other complication.

Dec: 8th. Blood count taken in morning before breakfast while fasting. Red cells 4·600,000 - White cells 8,000.

Intravenous injection of Hetol 1% begun next day, about 10 p.m and count taken next morning at 7.30 a.m. No alteration noticed after 1 milligramm of Hetol 1% Solution, but, on 13th, after injection of Milligrammes $\overline{III}$, a leucocytosis of 6·200 above normal found.

Two days subsequently Milligrammes $\overline{IV}$ injected and a leucocytosis found of 7-600.

As the injection was increased every second day, the leucocytosis continued, but gradually diminishing, until before his discharge 5 days after cessation of treatment, the increase was 8000 above the normal. The greater leucocytosis at first being due, I think, to the marked reaction at first set up around the diseased areas which gradually decreased as the diseased area became organised in the process of cell proliferation.

During the period of intravenous injection of Hetol, the patient's temperature fluctuated rather peculiarly, falling at times to below 97° F. about 6 a.m., rarely rising much above normal in evening. This rather remarkable variation ceased when the injections were stopped.

During the treatment, the patient always stated that he felt better every day, and suffered no discomfort unless a slight stinging sensation at site of injection for about 15 minutes or so after.

During the 34 days treatment of Hetol, he gained 6 lbs. in weight. Sputum almost disappeared. Cough became much less, and all the moist sounds disappeared from right apex - breathing less frequent and troublesome, and the patient felt so well he wished to leave Hospital and get back to work.

EDWARD COUZENS.

Admitted for Haemoptysis.

Age 37.

Coachman.

Family History :- Parents healthy. 2 sisters and 4 brothers all in good health, no members of family dead. Married. 2 children healthy, (one mis-carriage.)

Hereditary Tendencies :- Mother had ? tubercular disease of lungs.

Previous Illnesses :-

Had haemoptysis slightly 5 years ago. Cough since, slight. Very often catches cold in winter. No accidents.

Present Illness :- Cough returned four months ago, and since then has gradually become worse. Sputum greenish, and in nummular masses. Sweating slight. Cough not severe. Some loss of flesh of late.

On Saturday, February 24th, he had rather more to do than usual. He is a coachman, and his horses became restive, requiring a good deal of force to control. Just then he coughed up about a small cupful of bright red

blood. No recurrence since.

Condition on Admission :- Tall dark complexioned man, well developed, but thin. Cheeks flushed, and expression somewhat anxious. Temperature 100. Pulse 92, bounding in character, wave large, regular in time and force.

Respiratory System :- Cough infrequent, hacking. Sputum greenish, muco-purulent - nummular pieces at bottom of mug. Also altered blood in considerable quantity. Chest :- Expansion of left side good, but impaired movement at right apex, with considerable flattening below and above clavicle. Chest long and somewhat narrow.

Percussion :- Note high pitched all over right apex down to 3rd. cartilage - boxy in character.

Auscultation :- Cavernous breathing at right apex anteriorly and posteriorly. Accompaniments, dry metallic crepitations, especially at end of inspiration, also, some large moist sounds. Vocal fremitus increased over right apex. Vocal resonance pectoriloquy at right apex. Left Lung :- Breathing harsh, but no accompaniments, expiration slightly prolonged. No

alteration in vocal resonance or fremitus.
No pain over chest.

Alimentary System :- Tongue large and flabby, coated with brown fur. Secretions scanty. Teeth, several of molars carious. Indigestion frequent, with heartburn, pyrosis, flatulence and nausea, but no vomiting. Bowels constipated. Abdomen moves well, organs normal.

Uriniary System :- Act normal. Urine 1020, acid nil.

Circulatory System :- Heart normal in size. No murmurs. Pulse :- regular in time and force; volume of wave large, sudden fall; low tension between beats. Arterial wall normal. Other systems normal.

PROGRESS :-

Feb:23rd. No return of haemorrhage; still some altered blood in sputum.

" 24th. Slight return of bright red blood in sputum to-day; coughs rather more. Sleeps well.

" 26th. Still altered blood in sputum with greenish nummular masses. Much better. Tongue still thickly coated.

Mar: 2nd. No more haemoptysis - but altered blood still seen in sputum in small quantity.

Mar: 7th. Moist sounds still marked at right apex, above and below clavicle - as low as 3rd. cartilage. Left lung apparently normal.

Blood count done in morning before any food taken - Red cells 4·500,000. White cells 7,500.

Tubercle found in numbers in sputum.

NOTES ON PROGRESS :-

Feb: 9th. Intravenous injection of Hetol begun, $\dot{I}$ milligramm of 5% solution, and, 6½ hours after a white count done - 11·500 white cells found per c.m.

" 11th. Patient has gained 4 lbs. in weight - he feels well. No blood in sputum. $\ddot{\dot{I}}\dot{I}$ Milligrammes Hetol 5% solution. White count 10 hours after, 14·800 white cells.

" 13th. Hetol Milligrammes $\dot{I}\overline{V}$. White count 5 hours after gives 12·800 white cells.

" 17th. Hetol Milligrammes 8, white count 4 hours after gives 12·750 white cells.

" 18th. Has gained 1½ lbs. Slight quantity of

red blood in sputum - which patient says comes from gums.

Feb:21st. Hetol milligramms 11. Blood count 4 hours after gives 16,000 white cells. Sputum still muco-purulent and nummular, but rather less in amount - no sweating. He feels well, slight flatulence.

" 25th. Has gained 2 lbs. in weight. Moist sounds have almost gone from right apex, very few dry crepitations. Hetol has produced very definite leucocytosis.

Mar:30th. Amphoric breathing at right apex with fine dry crepitations - no moist sounds heard now. Complains of a drawing sensation at right apex, caused by contraction of newly formed fibrous tissue developed in phthisical area. Coughs little, no blood in sputum. No sweating. Feels much better; out in grounds every day.

Apl: 8th. Much better. Looks well. Has gained 2 lbs. in weight. Coughs only in morning. Sputum much less. No moist sounds now, breathing not so harsh. Appetite very good. Still undergoing the Hetol treatment.

SYNOPSIS

On admission, right lung showed marked signs of cavitation, and active breaking down at apex. Sputum contained considerable amount of blood, and was copious. Considerable cyanosis, and marked dyspnoea. Tubercle Bacilli were present in numbers in Sputum.

Previous to Hetol treatment, the usual preliminary Blood count was taken after the patient had fasted all night, and, was found to be :- Red cells 4·500,000 - White cells 7,500 per c.m.

Intravenous injection of Hetol began 2 days after, and 5 days after this blood disappeared from sputum. 5% solution used (1 milligramm) Count done after 6½ hours, and, 11,500 white cells found. After 2 milligramms the Leucocytosis reached 14·800.

He steadily improved from beginning of treatment putting on weight rapidly - 8 lbs. in one month. Cough and expectoration became much less. He frequently stated that he felt better each day.

The moist sounds disappeared, and, breathing became much less harsh at right apex, only an occasional dry click being heard. He was not permitted to have active exercise, but went out in grounds part of day.

AGNES PHILLIPS.

Age 24.

Waitress.

Family History :- Father died of heart disease age 47. Mother alive and healthy, other members of family in good health. One sister died of phthisis.

Hereditary Tendencies :- Tubercle only.

Previous Illnesses ;- Influenza several times. Anaemia when a girl. Has had a cough for 4 years.

Present Illness :- Caught a cold in her chest 4 years ago, and cough has remained since. About 6 months after onset, slight haemoptysis occurred, and this has recurred several times since - not more than 3ŧ on each occasion. Haemorrhage more frequent of late, and sputum streaked with bright red blood almost every day. Cough more marked also, especially for past three weeks. No sweating. Marked loss of flesh lately. Palpitation on exertion - Appetite poor.

Condition on Admission :- Development good - dark

complexion; regular features, eyelashes long. Expression melancholy. Skin pale. Mucosae anaemic slightly. Slight dyspnoea. Respiration 20. temperature 98°. Pulse 80, fairly good and regular.

Respiratory System :- Cough frequent and hacking. Sputum small in quantity, white, mucoid and frothy.

Chest :- Rather long, but fairly well developed. Movement impaired at left apex. Slight hollowing above and below clavicle (left).

Percussion :- Left apex anteriorly and posteriorly note higher pitched than on right side, to level of third cartilage. Right apex note also slightly impaired.

Auscultation :- Breathing harsh with prolonged expiration, especially at left apex anteriorly and posteriorly, and over left base posteriorly. No accompaniments. No alteration in Vocal vibration. Vocal resonance slightly nearer at left apex.

Circulatory and Urinary System :- Normal.

Reprod: System :- Menses irregular - 14, 21, and 28 day intervals. Last, 3 weeks ago. Duration 5 days, profuse with pain over sacrum.

No leucorrhoea.

Alimentary System :- Tongue clean, moist, not coated. Teeth, none carious and none wanting, not a good colour; gums rather spongy. No dyspepsia. Appetite capricious. Bowels regular - motions normal.

Abdomen :- Nil on inspection. Liver and spleen normal. Stomach note reaches almost to umbilicus. No succussion - or vermicular movements seen. Other systems normal.

PROGRESS :-

Dec: 4th. Sputum about 3 $\overline{iss}$, tinged with bright red blood. Sweating a little.

" 6th. Sleep poor - appetite not good. Sputum contains tubercle bacillus. Menstrual period present. No count done yet on that account.

" 9th. Blood count - fasting in morning. 7·300 white cells.

" 10th. Hetol 1% sol: intravenously $\bar{I}$ m.g. left basilic vein.

" 11th. Blood count Leucocytes 7·300. Hetol 2 mgr. 1% sol:

" 13th. Hetol 4 mgr. 1% sol: 10,200 white cells.

" 15th. Feels better, sputum rather more blood-stained. Hetol 5 mgr. 1% sol: Blood

count 9,200 white cells.

Dec:16th. Hetol 8 m.g. 2% sol: Feels better, sleeps well. Appetite better, no sweating.

" 17th. Slight pain over left base posteriorly, no accompaniments or friction heard there. Lung condition same, no crepitations; rather more blood in sputum.

" 18th. Feeling better - less blood in sputum. Hetol 9 m.g. 5% sol:

" 21st Hetol m.g. 5 1% sol: as 5% solution finished.

" 22nd. White count 9·000 white. Feels better, sleep good. Less blood in sputum. Very little cough.

" 23rd. Hetol m.g. 12. 5% Temperature normal, no pain.

" 26th. Hetol m.g. 14° 5% solution.

" 30th. Glands on right side much swollen and inflamed. Cutting a wisdom tooth. Sputum tubercle bacillus present in great numbers.

Jan: 1st. Not much sleep owing to pain in neck and jaw. Temperature normal. Blood count 7,000 leucocytes.

" 5th. Pain gone. Swelling of neck much less.

Sleeps well. Chest condition same - no accompaniments.

Jan:10th. Feels well, no injections since - putting on flesh. No pain at left base.

" 18th. Leaving Hospital to stay with friends in country. Feels much better. Lungs much the same on examination; less dyspnoea.

S Y N O P S I S

This patient had a history of cough for 4 years with frequent slight attacks of haemoptysis.

Left apex showed signs of consolidation and some retraction, but no softening taking place. Considerable dyspnoea and pain over left lower ribs. Sputum tinged with small quantity of red blood on admission. Slight sweating. Tubercle present in numbers in sputum.

Shortly after admission, menstruation appeared, and the blood count previous to Hetol treatment was not taken till some days after menstrual flow had ceased, owing to marked leucocytosis occurring then. Her normal white count was found to be 7.300 per c.m. After 2 injections of Hetol it

increased to 10,200 remaining between 7 to 9,000 till Jan: 9th, when 11,000 was reached, the maximum leucocytosis obtained. Nine days after the treatment ceased the white count was found to be 7,400. On admission, patient's appetite was very poor indeed, but this rapidly improved, and her dyspnoea and pain in side became less. She felt much better before her discharge, although her weight decreased 3½ lbs. during the treatment. Sputum became less, and blood disappeared. Tubercle were present in sputum on discharge from Hospital.

WILLIAM SWARTBOOI.

Age 33.

Soldier.

Family History :- Parents healthy. 4 brothers and 5 sisters, all well. 1 brother was drowned. 1 sister died of pneumonia. Married, one child. (No miscarriages.)

Hereditary Tendencies :- ? Tubercle.

Previous Illnesses :- Has been through most of S. African war as Waggon driver, and, Volunteer 1 year. Was in Bloemfontein Hospital for cough and dyspepsia. Had ? malarial attacks at front. Was with Lords Roberts and Methuen. Slight flesh wound on right arm from splinter caused by shell fire. Bilious attacks and pain over liver at times, no jaundice. No venereal disease.

Present Illness :- Has had a slight winter cough. Three days ago, cough became much worse accompanied by shivering and pains all over body, with feverishness; pain most severe over left side chest. Sleepless since onset. Vomited frequently for first two days at onset. Marked shortness of breath.

Condition on Admission :- Development good, tall slim and wiry. Pale copper coloured skin. Hair black, and curly, short. Pained and anxious expression. Marked dyspnoea. Cough frequent, short, and painful. Temperature 100.8°. Pulse 100. Resp: 32.

Respiratory System :- Chest long and rather narrow. Movement fairly good. Percussion note slightly impaired all over left lung especially at left base posteriorly.

Breathing harsh visicular, with prolonged expiration, and a few moist and dry sounds at each base. Vocal vibration, and vocal resonance unaltered.

Circulatory System :- Apex beat normal situation. Heart not enlarged. Sounds normal. Pulse regular, 100, volume fair, rather bounding. Tension low. Artery wall normal.

Urinary System :-

Normal.

Alimentary System :-

Tongue coated with whitish-grey fur; tremulous: deglutition normal. No pains after or before food. No sickness. Bowels constipated.

Abdomen :- Nil abnormal on inspection or

palpation. Liver very slightly enlarged. Spleen normal, other organs normal.

Jan:24th. Slept fairly well. Coughed a good deal. Sputum less copious, frothy and muco-purulent.

Slight impairment of note over left scapular region: breathing broncho-vesicular over this area - no marked pain now.

Sweats a little, especially at night. Temperature falling.

" 27th. Better. Temperature falling gradually and steadily. Tongue rather more coated. Cough not so troublesome. No impairment of note over chest now. Breathing more bronchial in character, especially at apices and bases posteriorly. A few moist sounds still, all over lungs. Sputum copious.

" 31st. Tubercle Bacilli found in quantity in sputum. Breathing much the same. Much better. Temperature subnormal.

Feb: 1st. Loud bronchial breathing over left apex and dry crepitations, slight. Broncophony there. Some pain across front of chest. Rise of temperature again, not so well.

Feb: 4th. Hetol injection begun. Temperature still up with evening recession, not reaching normal. Tongue dry and brown. Cough troublesome. He does not look so well. Sweats a good deal.

Feb: 9th. Temperature reached 103·2° yesterday. More cough and expectoration. Pain over right chest. Areas of bronchial breathing all over chest - scattered, especially at right apex. Sweating freely.

" 12th. Rather better. Temperature falling, feels better, cough and sputum less. Taking food better, sleeps well.

" 11th. Hetol m.g. 2, 5% solution hypodermically.

" 14th. Much better - no pain, cough and sputum still less. Temperature has not gone above 100° for 2 days. Has been out on couch. Very few crepitations to be heard now, but breathing still bronchial in scattered areas.

" 15th. Temperature 101·2° to-day, not out of bed. Feels well, no new symptoms. Hetol m.g. 15.

" 17th. Temperature has reached normal again. He feels well; good appetite: much less sputum - up every day.

Feb:20th. Very much better. Temperature normal for two days. Auscultation :- A few moist sounds still at bases - bronchial breathing at left apex.

" 24th. Up every day. Very little sputum; cough almost gone. Nil on auscultation. Putting on flesh; and much improved in appearance. Appetite good. His master wishes him to leave for South Africa on 28th.February. Hetol injection has reached $\overline{XV}$ milligrammes.

RESUMÉ.

On admission, patient had marked signs of Tubercular broncho-pneumonia. Sputum contained very numerous tubercle bacilli. His temperature gradually fell to near normal at end of first week, but, rose again on several occasions in rather an unpleasant way. While temperature was still elevated, Hetol injections 5% solution were begun subcutaneously. Then his temperature gradually

began to fall as the injections increased in quantity, till it finally became normal. Sputum gradually lessening till it disappeared; and all the physical signs cleared up, leaving no trace whatever. Appetite improved during the Hetol treatment, and he put on weight steadily. On leaving Hospital he returned with his Master, a Doctor in R.A.M.C., to South Africa.

WILLIAM SAYERS

Age 17.

Labourer.

Admitted for Tubercular Meningitis.

Family History :- Parents and other members of family in good health.

Hereditary Tendencies :- Tubercle in mother's family.

Previous Illnesses :- Scarlet fever when a child.

Present Illness :- Patient has had headache for 2 or 3 months past frequently. Felt ill and unfit for work. Three days before admission, he became drowsy, headache was severe, and frequent vomiting followed. Headache grew steadily worse, and was accompanied by giddiness and delirium with stupor on day before admission. Semi-conscious, and very noisy at night, yelling loudly. Breathing loud and stertorous. Pulse irregular and slow. Widal's reaction tried, and found negative before admission.

Condition on Admission :- Well developed, and body well nourished. Semi-conscious, breathing loud and irregular. Pulse, full and slow, with

slight irregularity. Temperature 100. Pulse 60.

Nervous System :- Sensation:- Slight general hyperaesthesia. Plantar reflexes plus, with tendency to Babinski's sign on right side. Abdominal and epigastric reflexes absent. Organic reflexes :- Swallowing normal. Breathing irregular, and somewhat stertorous. Retention of urine. Bowels constipated.

Motion :- No paralysis or paresis. K. J. lost on each side - no clonus, ankle, or patellar. No retraction of neck.

Pupils react to light and accommodation and consensual reflex. Right pupil rather larger. He does not follow fingers when asked to do so. Cannot fix. Bilateral internal strabismus - alternating in left eye with external squint. Hearing normal. No discharge from ears at any time.

Intelligence - incoherent and rambling, excited at times. Calling out loudly, and laughing in a childish way. Sometimes he answers questions correctly. Sleep - Scarcely any for 3 nights. Spine and cranium normal.

(Kernig's sign and tache cérébrale absent.)

Circulatory System :- Apex beat normal. Heart not enlarged.

Auscultation :- No murmurs.

Pulse :- Slightly irregular in time and force. Volume full - slow fall in wave. Tension between beats medium. Vessel wall normal.

Alimentary System :- Tongue coated thickly with yellow fur; dry. Secretions scanty. Teeth good, appetite poor. Deglutition normal. Occasional vomiting, cerebral in character. No pain after food. Bowels constipated

Abdomen :- Wall hollowed out - movement impaired generally. Organs normal.

NOTES ON PROGRESS :-

Jan:22nd. Has been very noisy all last evening, yelling and shouting, calling on his mother. Slept about 2 hours. Very restless, and, chattering to himself. Delirious nearly all morning, was partly conscious at times. Takes his food well i.e., Beef Tea, Milk, Custard &c. Passed fair amount of urine, and had 2 loose actions after calomel gr. V. No alteration in nervous system. Tache cérébrale not marked.

" 23rd. Slept 2 hours, has been very restless.

Calling out frequently, has delusions of sight and hearing. Screaming often. Takes food fairly well. Bowels opened freely. He knows when bladder requires to be emptied. No other change. Pulse better, still irregular.

Jan:25th. Slept 3½ hours. Less noisy, has taken food well. K. J. same. Babinski's sign present on left side. Temperature and pulse much same - latter rather better.

" 26th. Lumbar puncture performed, needle passed in between 4th. and 5th. lumbar vertebrae on right side; fluid drained off very slowly. About $\overline{\overline{3ii}}$ came away in 5 minutes. Puncture done at same level on left side, fluid came rapidly, and 10 C.C. were obtained in about ½ minute. Puncture sealed with gauze and collodion. Gauze pad, wool, and bandage. No leakage followed. Fluid sent to Clinical Research Society, London.

No tubercle found, and traces of sugar and albumin obtained, but, the fluid was not inoculated into any animal, and therefore the positive proof of the

presence or absence of tubercle bacillus was not obtained (Musser.) ※.

Jan:27th. Pulse more irregular - becoming high tensioned. Patient rather weaker. Incontinence of urine. Takes food well. Slept fairly, and all day yesterday. Slight retraction of head.

" 29th. Pulse high tensioned and very irregular, 120. Much quieter, moans often. Sleeps well. Swallowing fairly good. Bowels freely opened, yesterday 3 times. Right pupil semi-dilated, but active to light and accommodation. Incontinence of Urine still. Spoke a few words this morning semi-consciously.

" 31st. Slept 4 hours in night. Noisy in early part of night - answered several questions properly. Pulse more rapid and volume not so good. Much weaker. Became comatose in afternoon - lungs became oedematous, extremities cold and blue. Could not swallow food and rapidly sank.

P.M. Marked evidence of tubercular meningitis. Tubercles seen along vessels at base, over cerebellum and sylvian

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※ Musser's Medical Diagnosis.

fissure, interpeduncular space &c. Some thickening of pia mater over base and cerebellum. Subarachnoid fluid, and intraventricular fluid much increased. Ventricles enlarged. Lungs oedematous. Heart normal Other organs normal, no other evidence of tubercle.

R E S U M É.

This patient was admitted with marked signs of Tubercular Meningitis.

On the 6th. day of the disease Hetol 5% sol: was injected subcutaneously beginning with 2 milligrammes, and increasing by 2 milligrammes daily.

No effect seemed to follow its use.

Lumbar puncture performed on 6th. day after onset, 10 C.C. removed, little if any result followed unless, perhaps, he was slightly more conscious for a day or two after.

ALFRED PRICE.

Age 29.

Butcher.

This patient was admitted with symptoms of intestinal obstruction - bowels had not been opened for more than six days. This was relieved by repeated enemata; subsequently he developed symptoms resembling Typhoid Fever - but Widal's re-action gave a negative result.

On admission (16.6.02.) there appeared to be slight signs of bronchitis, but no impairment of note or alteration in resonance could be ascertained. 21 days after admission he suddenly developed pyopneumothorax with considerable collapse. Cough very troublesome and sputum very copious, muco-purulent, and offensive, containing tubercle bacilli. Moist sounds marked all over right lung with metallic dry crepitations. Area of dulness extending from 4th. space to base posteriorly. Vocal vibration and vocal resonance much increased there. Metallic tinkling very marked. Breathing amphoric, over dull area.

Blood count showed marked leucocytosis, 67,500 per c.m. Subcutaneous injections of Sodium Cinnamate 10% in normal saline solution M.30 injected between

shoulders. This caused considerable pain and discomfort, and, a 10% sol: of sodium cinnamate in Glycerine was substituted. Minims 20 injected subcutaneously once daily, without much discomfort, till discharge from Hospital. The physical signs gradually and slowly improved, the expectoration becoming much less, and the foetor disappeared. The temperature remained high, and of a tubercular type till about 14 days before his discharge. He went to the Convalescent Home attached to this Hospital, and on return 14 days after, he had put on flesh. However, he gained about 14 lbs. while under treatment in this Hospital.

ANNIE BARRET.

Age 31.

Re-admitted October 1st, 1902 with marked signs of cavitation at left apex. Old pleurisy with great thickening of pleura at left base. Over this area dulness was absolute to 7th. rib posteriorly. Early signs of phthisis at right apex. Haemoptysis several times. Tubercle bacillus found on October 10th. in sputum. Subcutaneous injections of Sodium Cinnamate begun on Oct: 6th, M. 3 every 2nd. day injected into buttock. Temperature and pulse steadily improved, also her general condition. Sputum became less, also, cough and sweating decreased. Cinnamate injection increased to minims 6 on Oct: 27th. Moist sounds had almost disappeared at left apex. Much less dyspnoea. Appetite good. Has put on flesh.

GEORGE BAKER.

Admitted, November 26th.

Discharged December 10th, 1902.

Early phthisis - both lungs affected. Onset 1 week before admission, accompanied by pain over

right side, slight cough, no haemoptysis. Temperature elevated considerably on admission.

Subcutaneous injections of Sodium Cinnamate M.3 were given every 2nd. day. Temperature fell gradually and cough became less after a few injections.

CONCLUSIONS

1. No toxic effects have been produced by the Hetol treatment. The veins selected for intravenous injection shewed no signs of inflammation or thrombosis.
2. In all the cases, marked improvement in their general condition was noticeable from the commencement of the treatment. Body weight and appetite increased in almost all of the cases.
3. The tuberculous foci became much less active, and, in some cases, all the signs of active cavitation disappeared.
4. Body temperature was reduced as the treatment proceeded, some cases shewing a marked tendency to subnormal variation. The pulse as a rule, became less rapid.
5. Cough and sputum in every case was markedly diminished. No haemoptysis resulted, although two cases were subjected to the Hetol treatment, only a few days after haemoptysis had ceased.

6. Leucocytosis was obtained in all the cases in which the corpuscles were estimated; in one case, more than double the normal count was reached.

7. The case of Tubercular Meningitis did not shew any marked improvement, but, I did not expect it in such a hopeless case, as, the treatment was merely experimental.

8. Sweating ceased, as a rule, shortly after the injections were commenced.

I consider that the Hetol treatment of Tuberculosis is worthy of a much more extensive and prolonged trial in this country than it has received in the past.

In conclusion, I have to thank the Members of the Medical Staff of the Sussex County Hospital, Brighton, for permitting me to carry out this treatment on their patients during my tenure of office as House Physician for the past year.

JOHN HENDERSON, M.B., C.M., Edi
County Hospital, Brighton.